

# LEGENDS IN NEPHROLOGY



## EXTRACORPOREAL NEPHROLOGY GROUP (ECNG)







## EXTRACORPOREAL NEPHROLOGY GROUP (ECNG)

 [ECNG.CO.IN](http://ECNG.CO.IN)



### SECRETARY

Amees Kuryachan

Contact No: +919605898077

E Mail: [ecngnephro@gmail.com](mailto:ecngnephro@gmail.com)

• In Association with •

**Cochin Kidney Foundation**

An education initiative by



from **Renauxe Pharma India Pvt Ltd**  
Makers of

**ACIDOSE**

500/1000/650

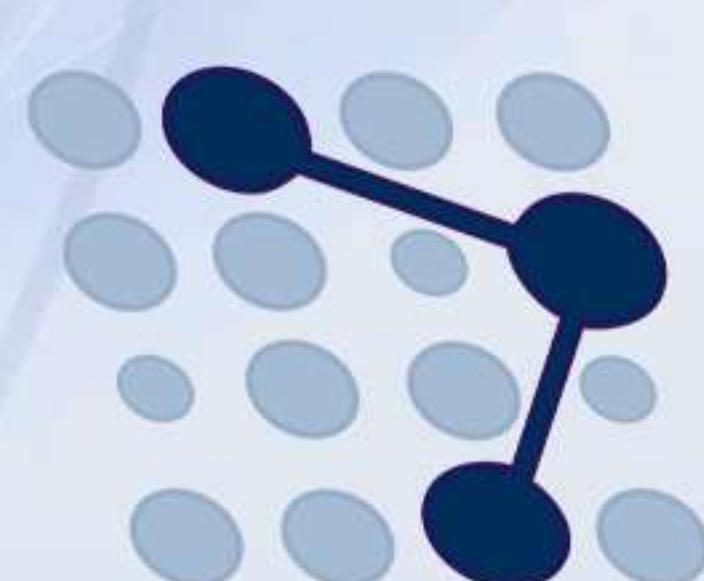
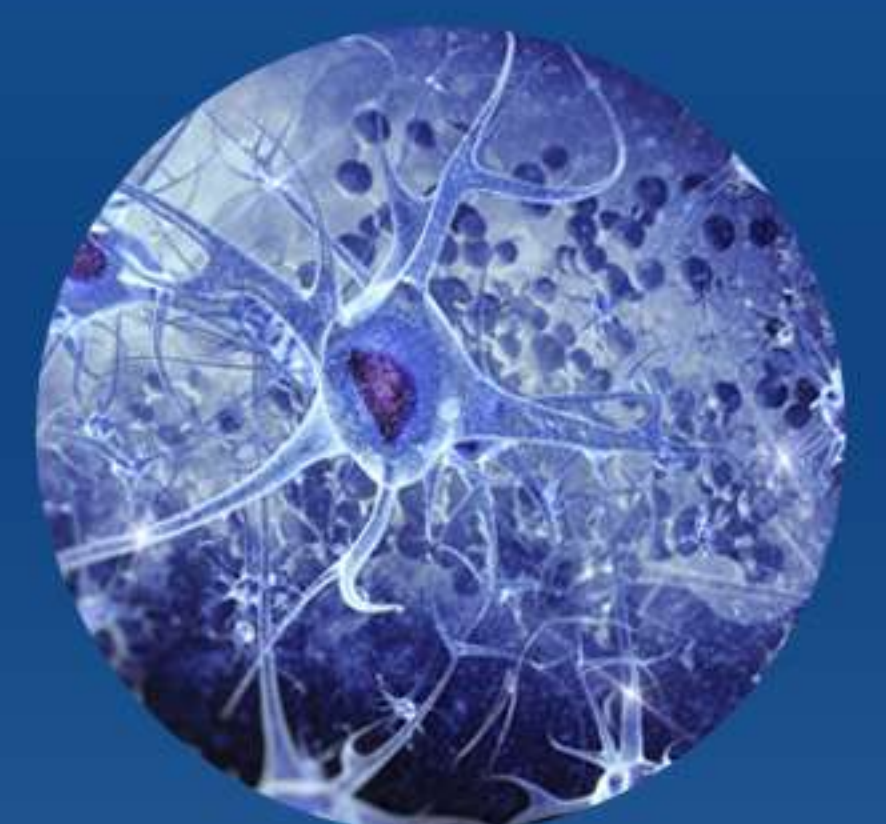
Sodium Bicarbonate 500/1000mg Tab/  
650mg EC Tab



**SCRIBNOR**

25/50/M75

Pregabalin 25/50mg Cap / Pregab 75mg SR +  
Methylcobalamin 1500mcg Tab



**RENAUXE**  
Enhancing quality of life



## Legends in Nephrology

*Their contributions continue to inspire us even today...*

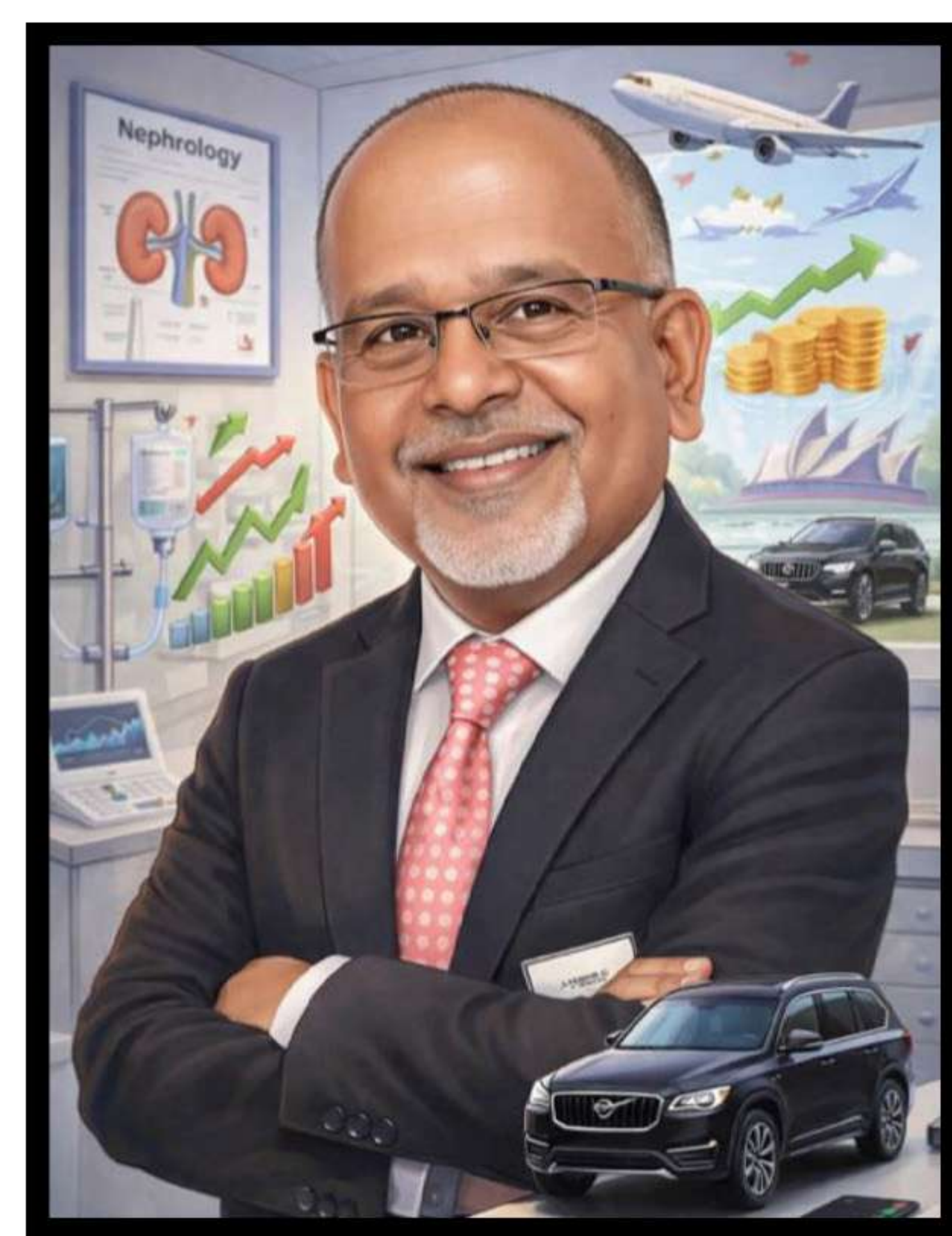
History of Nephrology is important not only for preserving our heritage, but also for inspiring young nephrologists to understand the vision, dedication, and scientific spirit of the pioneers who shaped the specialty. Their journeys and contributions continue to motivate future generations in advancing kidney care and research.

Legends, presented at the beginning of each session are digitally compiled for reference . This may be helpful for PGs, Teaching Faculty and for talks in different forums .

Prof. J.C.M Sastry, Prof. Ramdas Pisharody and Prof. Vidhya Acharia are remembered as Legends for their significant contribution for Indian Nephrology.

Thanks to Renaux Foundation for helping ECNG to bring out the first part of 2026 compilation.

*Wishing you a good reading experience  
and information*



**Dr. Georgy K Nainan**  
**ECNG Programme Director**



# INDEX

- ▶ **ANION GAP AND ACID BASE BALANCE.....** [Click here](#)  
Dr. William D Rose, Dr. Burton D Rose &  
Dr. Lawrence Joseph Henderson.
- ▶ **MICROHAEMATURIA.....** [Click here](#)  
Dr. Thomas Addis, Dr. Birch D F &  
Dr. Fairely K F
- ▶ **ARTERIO VENOUS FISTULA (AVF).....** [Click here](#)  
Dr. James E Cimino & Dr. Michael J Brescia
- ▶ **MONOCLONAL GRAMMOPATHY OF  
RENAL SIGNIFICANCE (MGRS).....** [Click here](#)  
Dr. Nelson Leung
- ▶ **CALCIUM CHANNEL BLOCKERS (CCB).....** [Click here](#)  
Dr. Albert Fleckenstein
- ▶ **RENAL ARTERY STENOSIS .....** [Click here](#)  
Dr. Hary Goldblatt
- ▶ **RENAL ANEMIA HYPOXIA –  
INDUCIBLE FACTOR (HIF).....** [Click here](#)  
Dr. Allan J Erslev, Dr. Gregg L Semenza,  
Dr. Peter J Ratcliffe, Dr. William G Kaelin Jr.



# INDEX

- ▶ **KIDNEY PERFUSION SOLUTION HTK  
(HISTIDINE-TRYPTOPHAN-  
KETOGLUTARATE).....**[Click here](#)  
Prof. Hans Jurgen Bretschneider
- ▶ **ULTRA PURE DIALYSIS FLUID AND  
WATER STANDARDS.....**[Click here](#)  
Dr. Bernard Canuad
- ▶ **HYPOMAGNESEMIA AN  
UNDERESTIMATED ENTITY!.....**[Click here](#)  
Dr. Humphry Davy, Dr. Arthur D Hirschfelder  
& Dr. Victor G Haury
- ▶ **IgA - GN BUDESONIDE.....**[Click here](#)  
Dr. Jean Berger
- ▶ **MANAGEMENT OF DIABETIC  
NEPHROPATHY - FINERENONE.....**[Click here](#)  
Dr. Peter Kolkhof
- ▶ **PNEUMOCYSTIS PNEUMONIA -  
PCP PNEUMOCYSTIS JIROVECII.....**[Click here](#)  
Dr. Otto Jirovec & Dr. Carlos Chagas
- ▶ **NSAID AND ACUTE KIDNEY INJURY.....**[Click here](#)  
Dr. Adams D H, Dr. Howie A J & Dr. Michael J



# INDEX

- ▶ PROF. RAMDAS PISHARODY.....[Click here](#)
  
- ▶ STREPTOMYCES  
(FILAMENTOUS BACTERIA).....[Click here](#)
  
- ▶ HYPERTENSIVE CRISIS.....[Click here](#)  
Dr. Nikolai Korotkov
  
- ▶ POLYARTERITIS NODOSA (PAN).....[Click here](#)  
Dr. Adolf Kussmaul, Dr. Rudolf Maier
  
- ▶ PROF. J. CHANDRA MOULI SASTRY.....[Click here](#)  
Dr. JCM Sastry
  
- ▶ RENIN ANGIOTENSIN & ALDOSTERONE  
(RAAS) POTASSIUM BINDERS.....[Click here](#)  
Dr. Robert A. A Tigerstedt, Dr. Irvine H. Page
  
- ▶ GRANULOMATOSIS WITH POLYANGIITIS  
(GPA ).....[Click here](#)  
Dr. Friedrich Wegener
  
- ▶ PROF. VIDHYA N. ACHARYA.....[Click here](#)



# INDEX

- ▶ **CONTINUOUS GLUCOSE MONITORING.....** [Click here](#)  
Dr.Adam Heller
- ▶ **ALPORT SPECTRUM DISORDER.....** [Click here](#)  
Dr.Arthur Cecil Alport
- ▶ **PHEOCHROMOCYTOMA.....** [Click here](#)  
Dr.Felix Frankel & Dr.Ludwig Pick
- ▶ **VACCINATION FOR HERPES  
VIRUS – SHINGRIX.....** [Click here](#)  
Dr. Abbas Vafai
- ▶ **EGFR & ORAL HYPOGLYCAEMIC AGENTS  
(OHA) IN CKD .....** [Click here](#)  
Dr. Thomas Addis & Dr. Homer Smitt

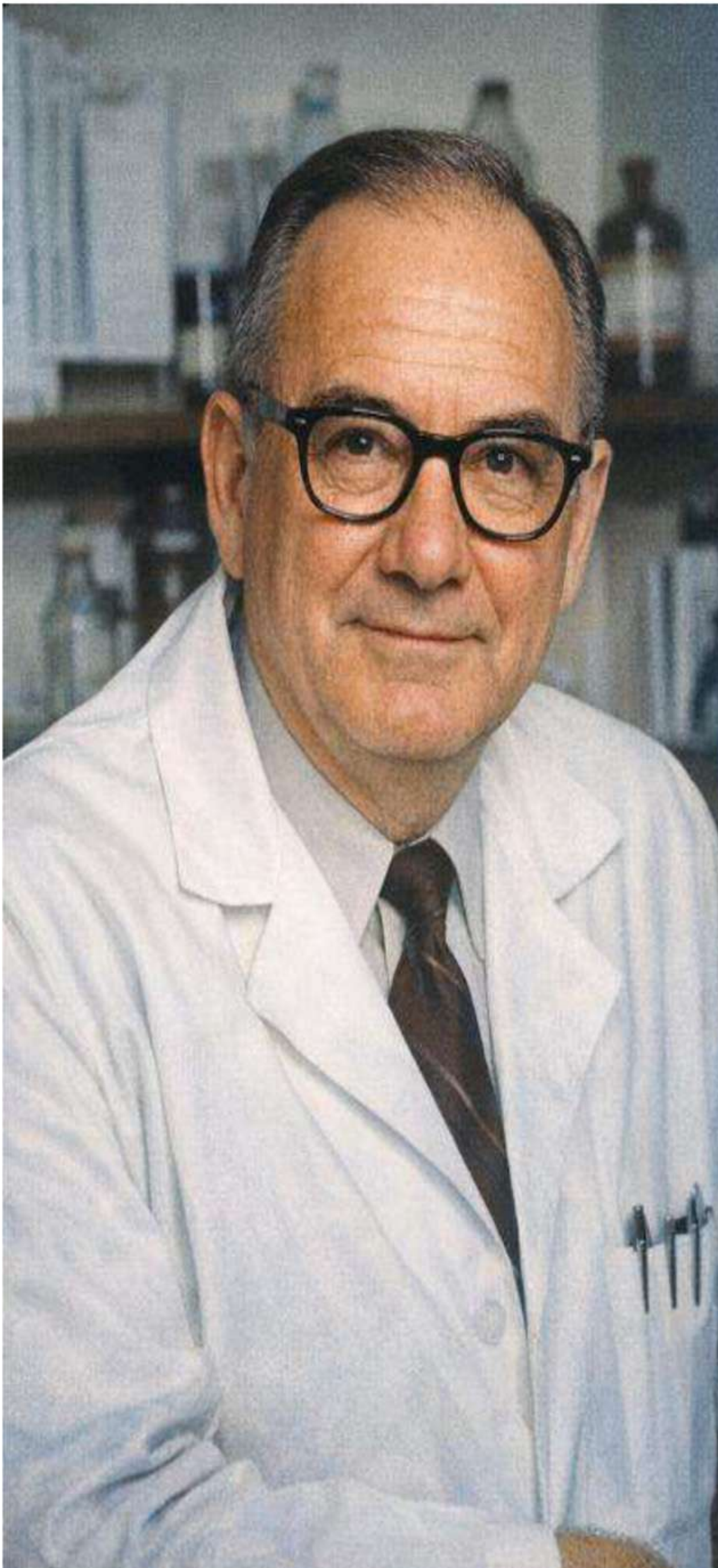


# **ANION GAP AND ACID BASE BALANCE**

Dr. William D Rose, Dr. Burton D Rose &  
Dr. Lawrence Joseph Henderson







# William D. Rose, MD

**Pioneer of the Anion Gap**

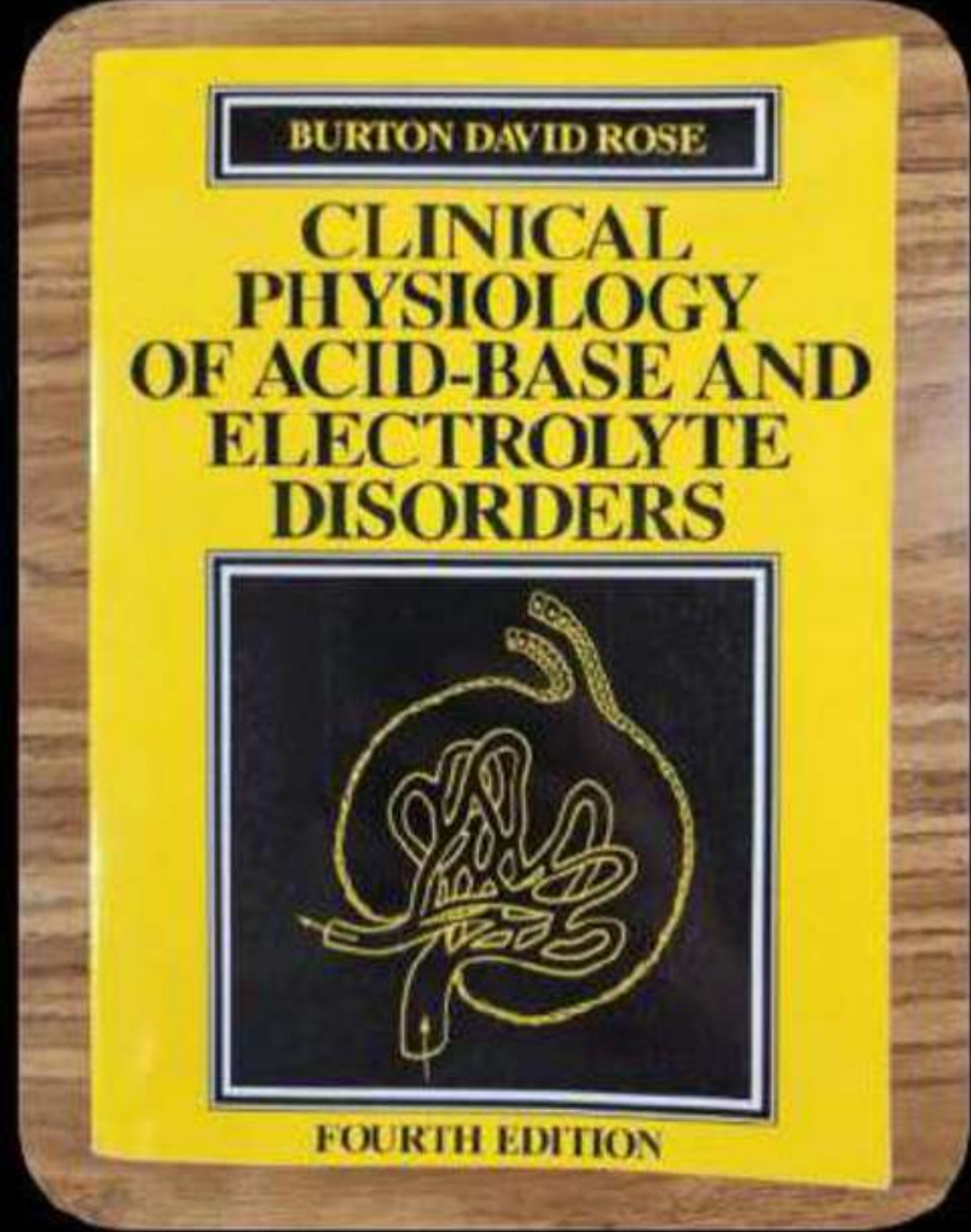
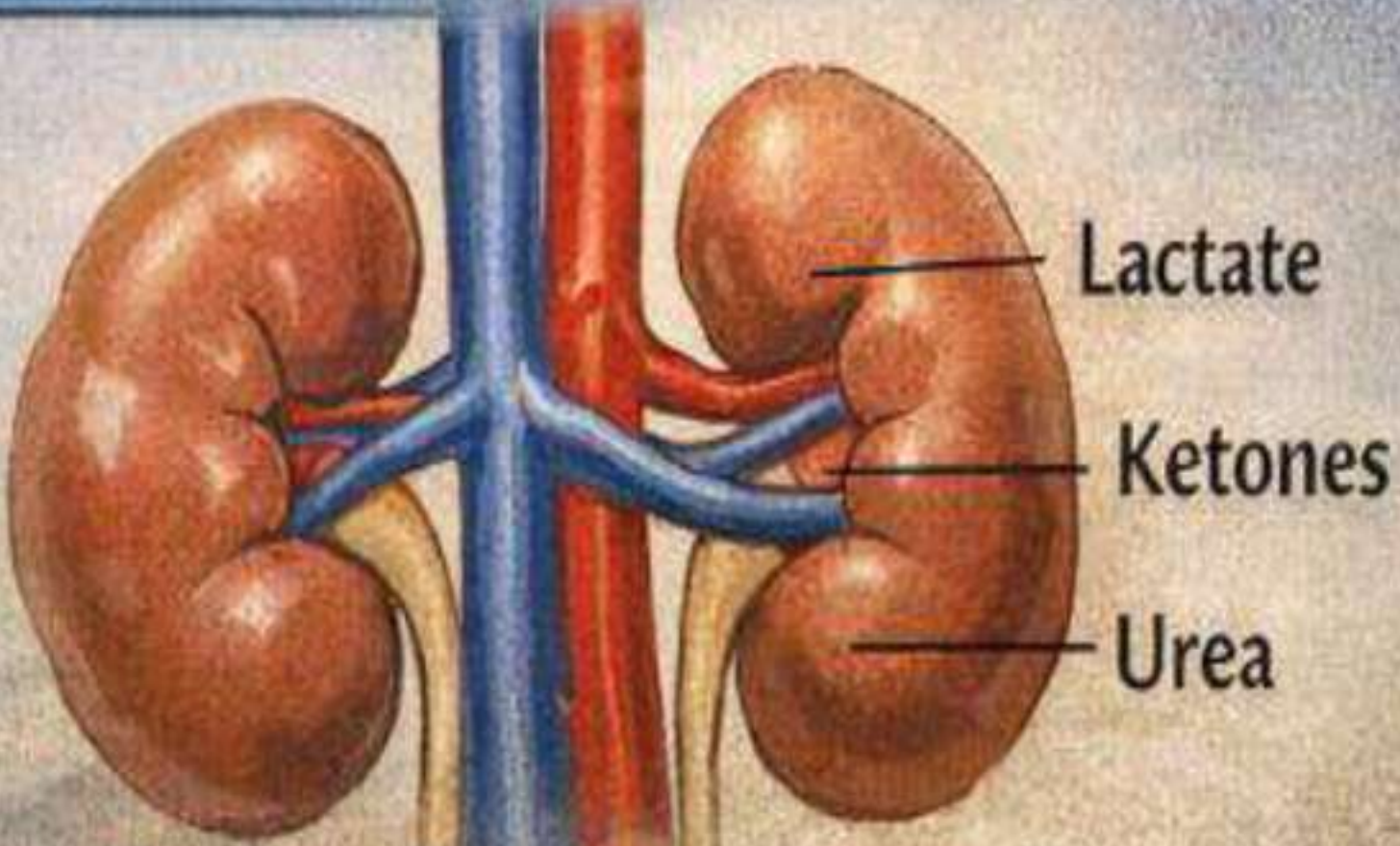
Introduced the anion gap concept to identify unmeasured anions in metabolic acidosis.

Transformed clinical acid–base diagnosis.

**CLINICAL PEARL:**

$$\text{Anion Gap} = \text{Na}^+ - (\text{Cl}^- + \text{HCO}_3^-)$$

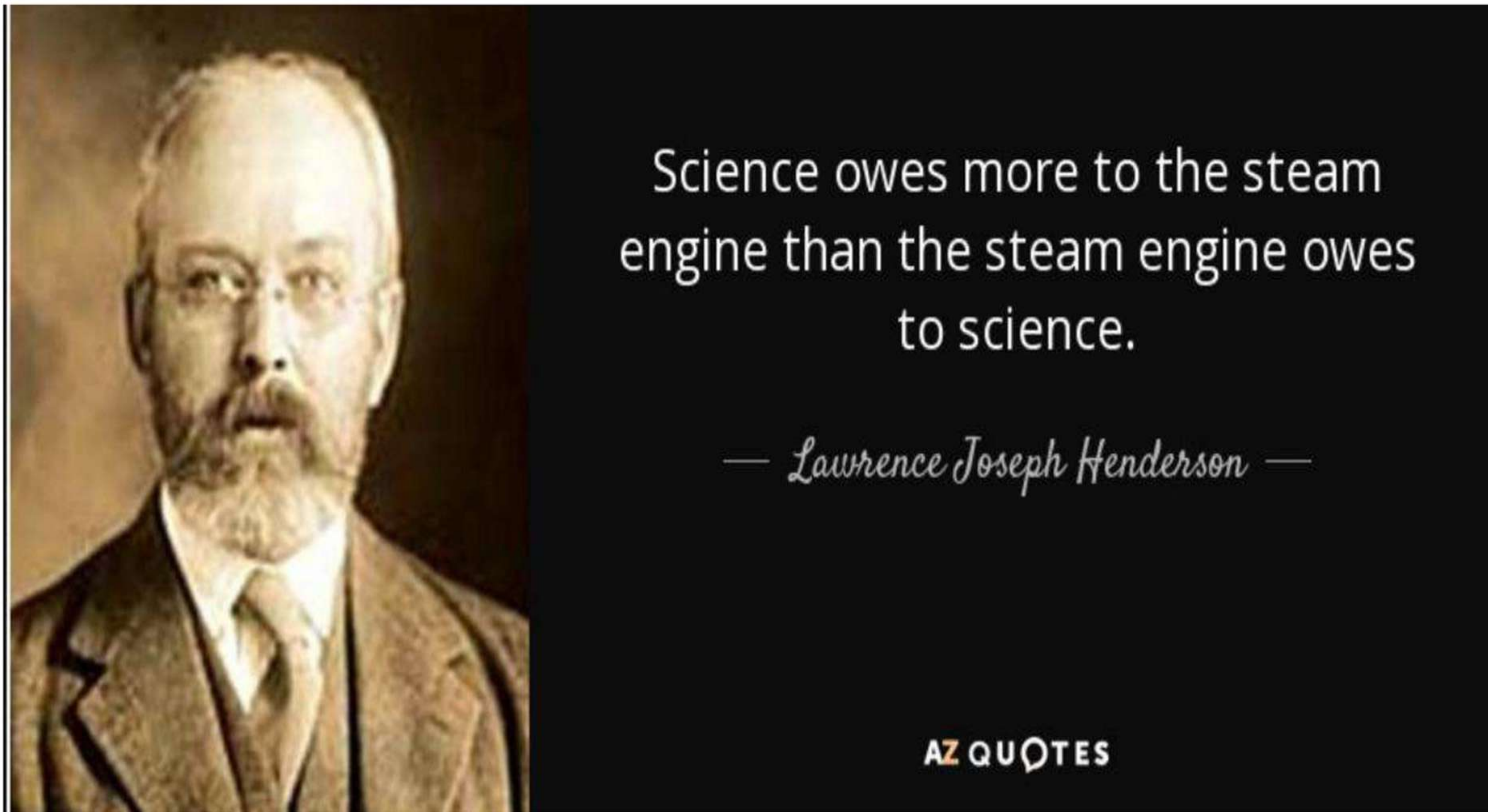
Lactic Acidosis | DKA | Uremia



**📌 Burton D. Rose was an American nephrologist known for clinical acid–base and electrolyte teaching, creator of UpToDate, and author of “Clinical Physiology of Acid–Base and Electrolyte Disorders.”**

Wikipedia





**Lawrence J. Henderson (1908) – described the bicarbonate buffer system**

**Henderson–Hasselbalch refers to the Henderson–Hasselbalch equation, fundamental to acid–base physiology.**

- **Henderson was emphasizing that practical technological advances (like the steam engine) often precede and stimulate scientific theory, rather than arising from it.**
- **In fact, thermodynamics developed largely because engineers were trying to understand and improve steam engines.**

**INDEX**





# **MICROHAEMATURIA**

Dr. Thomas Addis, Dr. Birch D F &  
Dr. Fairely K F





**Thomas Addis (1881 -1949)**

**Described microscopic haematuria through his pioneering work on urinary sediment examination.**

**He introduced systematic microscopic analysis of urine, including quantification of red cells (Addis count, 1926), laying the foundation for recognising microhaematuria**

***Dysmorphic RBCs indicating Glomerular hematuria were described by Birch and Fairley***

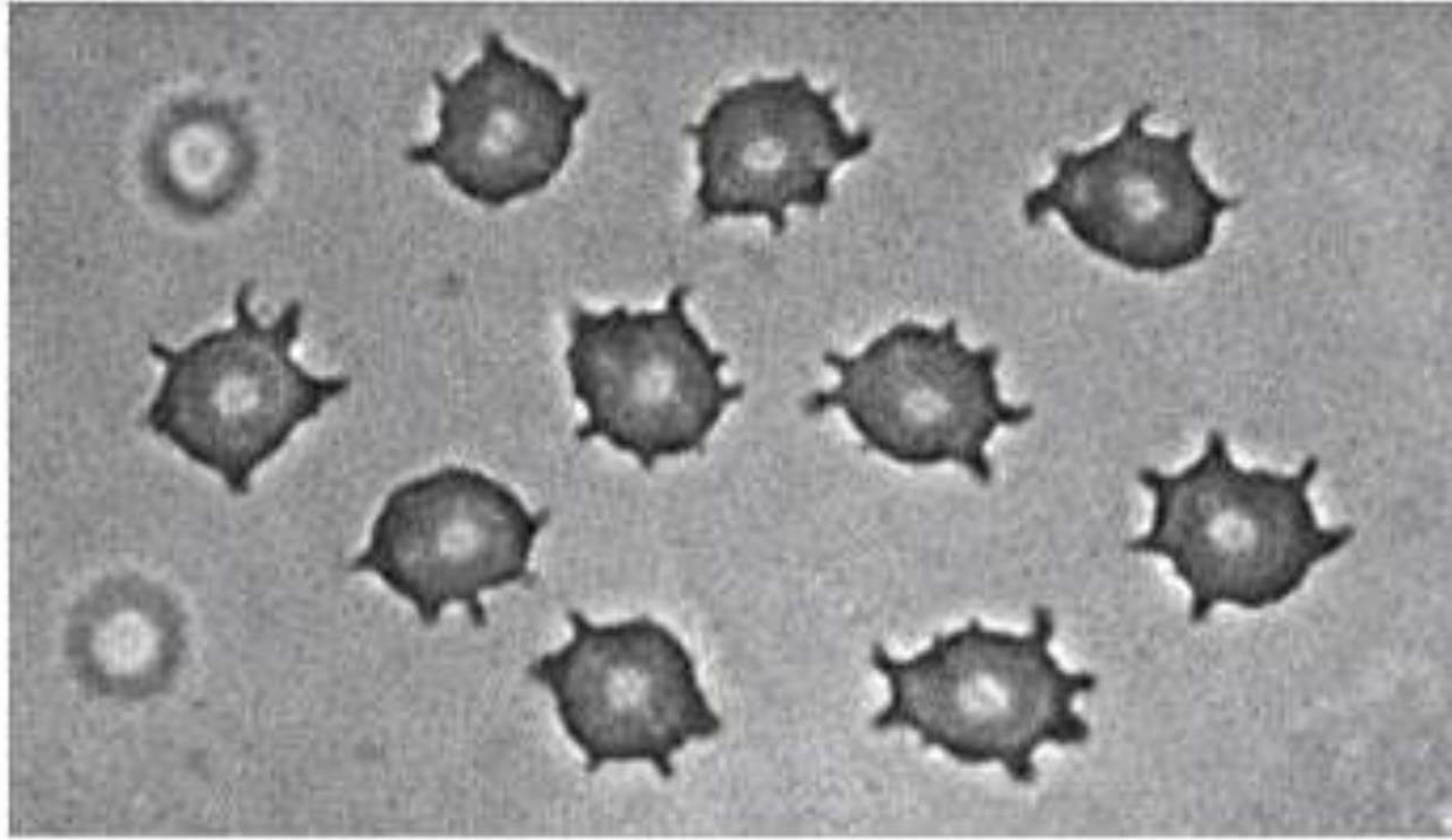


**Birch DF & Fairley KF (1979)**



## Dysmorphic Red Blood Cells – Glomerular Hematuria

Birch DF & Fairley KF, BMJ 1979



*Urinary dysmorphic red blood cells (acanthocytes) seen on phase-contrast microscopy, indicating glomerular origin of hematuria. Described by Birch DF and Fairley KF (BMJ, 1979)*

$\geq 5\%$  acanthocytes → Highly specific for glomerular hematuria

Isomorphic RBCs → Non-glomerular (urological) source

***Birch DF and Fairley KF (1979) demonstrated that dysmorphic red blood cells in urine are characteristic of glomerular haematuria.***

***They showed that irregularly shaped RBCs (especially acanthocytes) on urine Phase – contrast microscopy help differentiate glomerular from non-glomerular sources of haematuria***

INDEX





# ARTERIO VENOUS FISTULA (AVF)

Dr. James E Cimino & Dr. Michael J Brescia

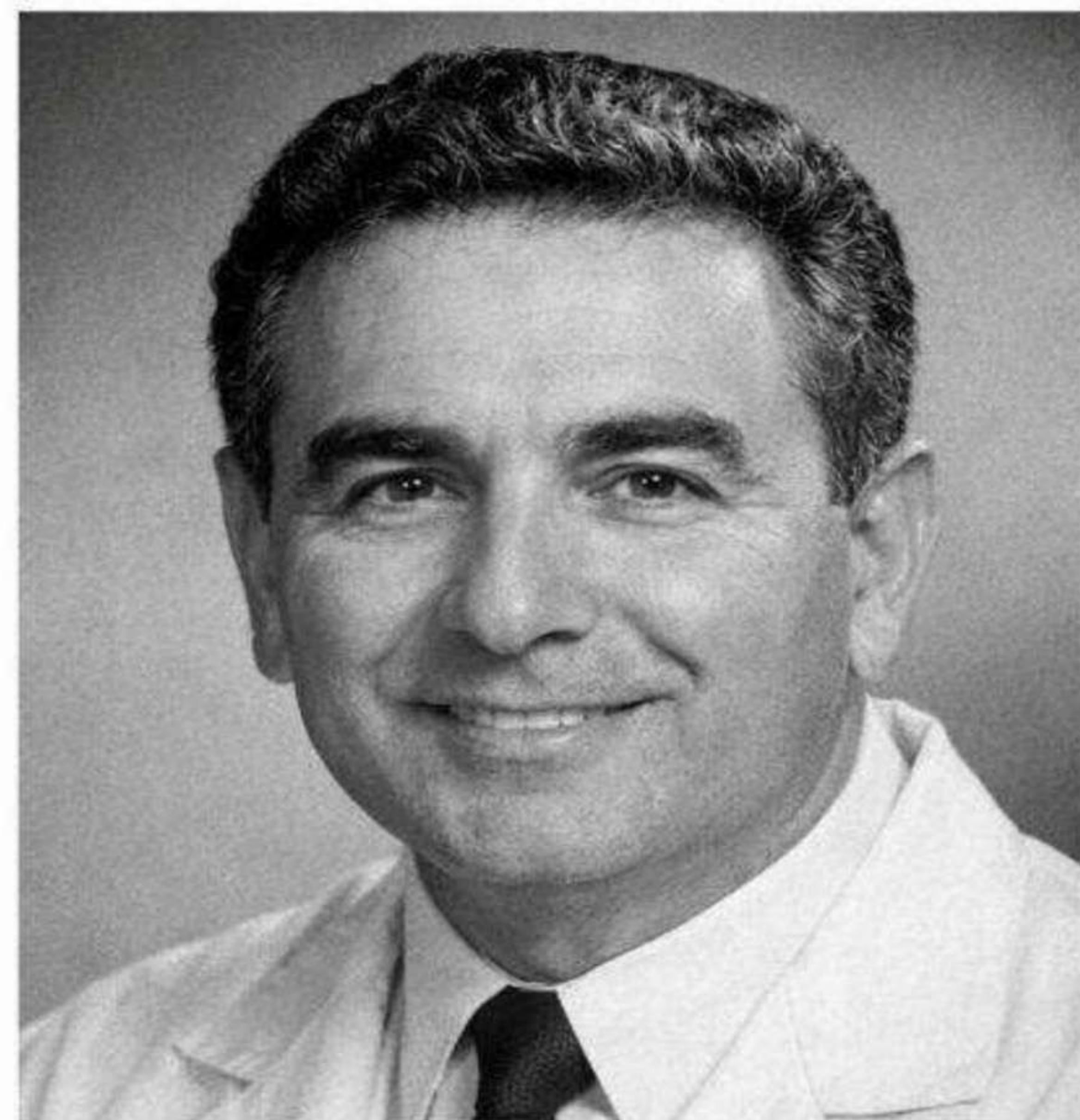
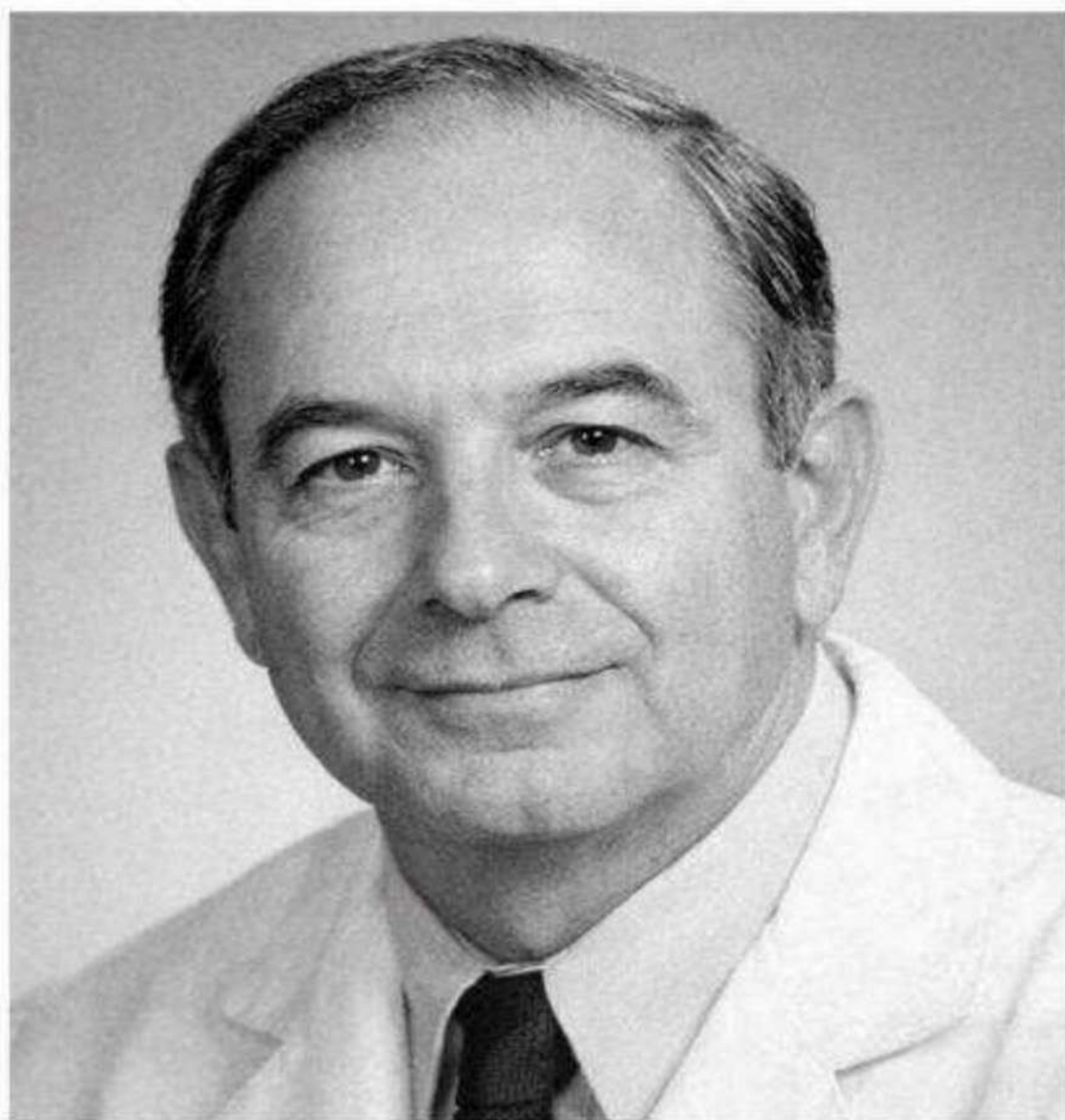


**Arteriovenous fistula (AVF) for hemodialysis was introduced and popularized by:**

**Dr. James E. Cimino and Dr. Michael J. Brescia**

- **Year: 1966**
- **Also associated with: Dr. Kenneth Appell**
- **Publication: New England Journal of Medicine**

**This is why the native AVF is classically called the BresciaCimino fistula.**



***Pioneers of the AVF for Hemodialysis***

***Dr. James E. Cimino & Dr. Michael J. Brescia***

***Described the AV Fistula in 1966***



**Dr. Cimino made a crucial bedside observation:**

**Patients who had repeated venipunctures or accidental arteriovenous communications developed veins that became thick, dilated, and easy to cannulate**

**Dr. Cimino along with Dr. Michael J. Brescia and surgeon Dr. Kenneth Appell**

**Deliberately created subcutaneous arteriovenous anastomosis at the wrist (radial artery – cephalic vein)**

**INDEX**





# **MONOCLONAL GRAMMOPATHY OF RENAL SIGNIFICANCE (MGRS)**

Dr. Nelson Leung



# **THE TERM MGRS WAS COINED BY THE INTERNATIONAL KIDNEY AND MONOCLONAL GAMMOPATHY RESEARCH GROUP (IKMG)**



## **LANDMARK PUBLICATION**

- **LEING ET AL., 2012**
- **“MONOCLONAL GRAMMOPATHY OF RENAL SIGNIFICANCE: WHEN MGUS IS NO LONGER UNDETERMINED OR INSIGNIFICANT”**
- **BLOOD, 2012**



## **WHY MGRS WAS IMPORTANT**

- **IT RECOGNIZED THAT SMALL PLASMA CELL OR B-CELL CLONES (NOT MEETING CRITERIA FOR MYELOMA OR LYMPHOMA) CAN STILL CAUSE SEVERE KIDNEY DISEASE**
- **COMMONER THAN WE THINK**
- **MGUS PREVALENCE:**
  - **~3-5% >50 YRS**
  - **~7-10% >70 YRS**
  - **~30-50% OF RENAL LESIONS IN PATIENTS WITH MONOCLONAL GAMMOPATHY MAY QUALIFY AS MGRS**

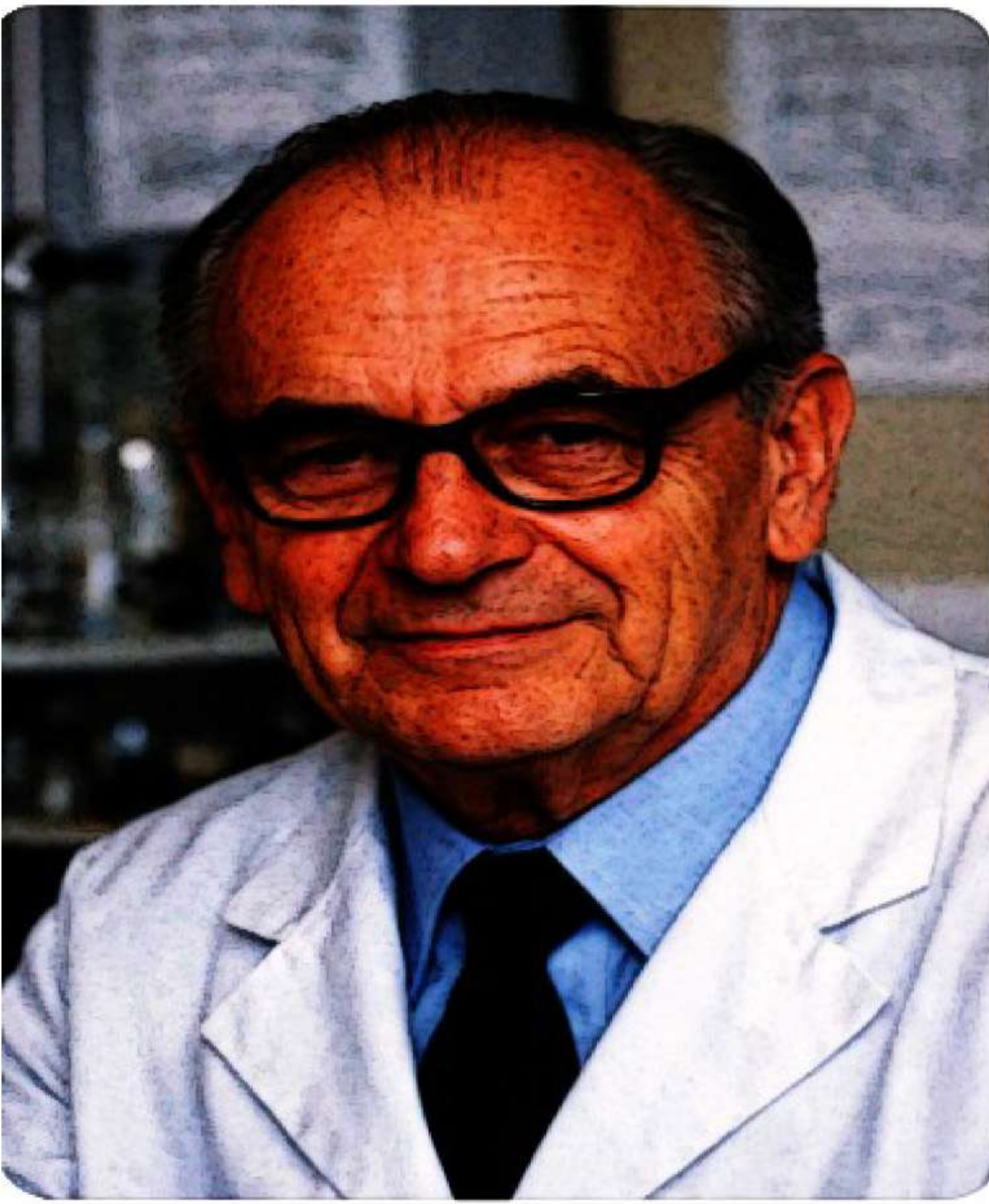
**INDEX**



# **CALCIUM CHANNEL BLOCKERS (CCB)**

**Dr. Albert Fleckenstein**





**Dr. Albercht Fleckenstein**

**Father of Calcium Channel Blockers (CCB)**

**(1950 – 60s)**

**Smooth muscle and cardiac contraction were found to be calcium dependent**

***Calcium<sup>++</sup> entry through slow channels (later called L-type calcium channels)***

- ***Verapamil***
- ***Diltiazem***
- ***Nifedipine***
- ***Amlodipine***
- ***Felodipine***
- ***Lercanidipine***

***Cilnidipine***

- ***Blocks L-type + N-type Ca channels***

***Efinidipine***

- ***Dual L-type + T-type calcium channel blocker***



**INDEX**





# RENAL ARTERY STENOSIS

Dr.Hary Goldblatt







## **Dr. Harry Goldblatt (1891-1977)**

**was an American pathologist who experimentally showed that narrowing the renal arteries causes persistent hypertension in animals**

### **Harry Goldblatt (1934)**

- The famous **Goldblatt experiment**
- Provided that **renal ischemia → renin release → hypertension**
- a fundamental discovery linking the kidney to blood pressure regulation



# Goldblatt, H., Lynch, J., Hanzal, R.F. & Summerville, W.W.

## Studies on experimental hypertension: I. The production of persistent elevation of systolic blood pressure by means of renal ischemia.

*J. Exp. Med.* **59**, 347–379 (1934).

JEM

FROM THE ARCHIVE

### Harry Goldblatt and the discovery of renin

In 1934, pathologist Harry Goldblatt established the first animal model of hypertension. This model provided researchers with the tools to delineate the renin-angiotensin system of blood pressure control and, eventually, to design enzyme inhibitors for the treatment of chronic hypertension.

As early as the mid-19th century, physicians had noted that patients with kidney disease and those with long-term high blood pressure (hypertension) both had enlarged heart muscles. The first clue to this kidney-hypertension connection came from physiologists Robert Tigerstedt and Per Bergman who injected kidney extracts into rabbits, thus triggering a dramatic rise in blood pressure. In a prophetic explanation, they suggested that the kidneys produced a soluble protein—they called it renin—that triggered a rise in blood pressure (1).

#### A little help from man's best friend

Decades later, the duo's results prompted attempts to provoke hypertension by stressing or injuring the kidneys of animals. None were successful until Harry Goldblatt arrived on the scene. Goldblatt had noted a characteristic narrowing of the renal blood vessels in patients who had died of hypertension. He reasoned that a decreased blood flow, and thus oxygen supply, to the kidneys (ischemia) might somehow trigger hypertension.

To test this idea, Goldblatt partially constricted the major renal arteries of dogs using a self-styled adjustable silver clamp. Partial constriction of both renal arteries resulted in a reproducible and persistent rise in blood pressure, in the absence of overt renal failure. Clamping other large arteries—splenic or femoral—had no effect, indicating that hypertension resulted specifically from kidney ischemia. Goldblatt published these results in 1934 in the *Journal of Experimental Medicine* (2).

Goldblatt's explanation for his results was similar to that of Tigerstedt and Bergman: ischemia causes the kidneys to produce an "internal secretion" that triggers vasoconstriction. This idea met with

considerable skepticism. "Goldblatt's discovery was spectacular, but nobody believed it," recalls cardiologist John Laragh. The skepticism, Laragh says, was largely because of the technical difficulty of Goldblatt's procedure, which few could reproduce. Eventually, Goldblatt's results were confirmed, but determining the identity of the "internal secretion" and renin (one and the same) took many more years.

#### The hunt for renin

Two groups—one led by Eduardo Braun-Menendez and the other by Irvine Page—attempted to purify renin but found that the higher the purity of the extract the less hypertensive activity it had. This confusing result was eventually explained by the discovery, in 1939, that the pressure-raising substance was not renin itself. Rather, renin was a proteolytic enzyme that converted a plasma peptide into a hypertensive product. Purifying renin away from its substrate had abolished its activity.

The two groups christened the active peptide product of renin "hypertensin"

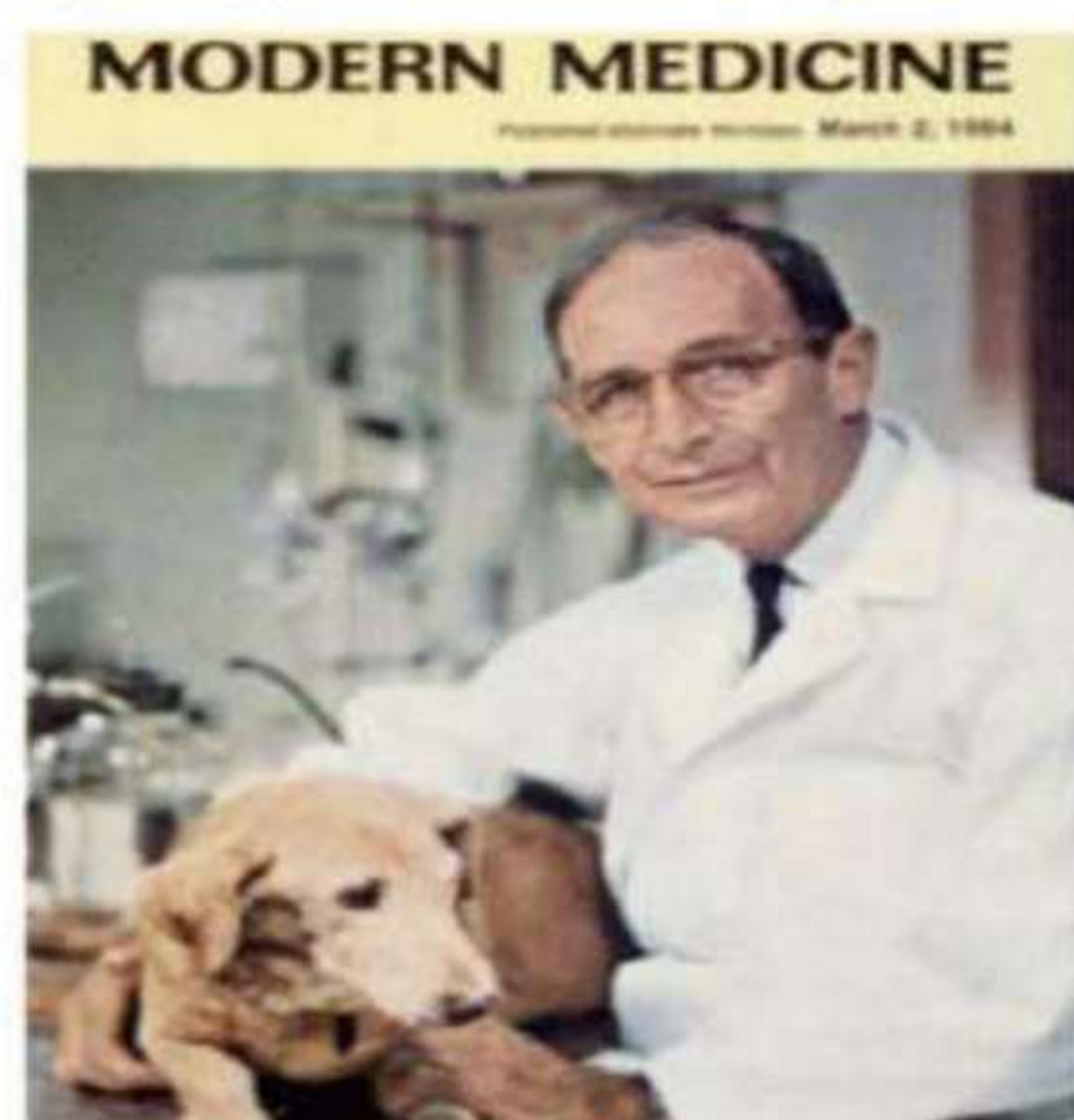
and "angiotonin," respectively (3, 4). They later compromised and renamed it "angiotensin" and its precursor "angiotensinogen" (5). Leonard Skeggs and colleagues later discovered that there were two forms of angiotensin (6), and it is now known that renin initiates an enzymatic cascade in which angiotensinogen is converted into angiotensin I, which is then processed by angiotensin-converting enzyme (ACE) into angiotensin II. Angiotensin II is the true culprit of hypertension.

#### Renin in human hypertension

Simple theory would predict high renin levels in patients with hypertension, but instead, says Laragh, "renin levels are all over the place." Thus, despite an understanding of the renin-angiotensin system in animals, there was still doubt about its role in humans. The development of ACE inhibitors helped explain this seeming inconsistency. Laragh and colleagues injected the first such inhibitor into patients and found a drop in blood pressure, but only in patients with high levels of circulating renin (7). In other studies, Laragh showed that hypertension not caused by increased renin results from insufficient salt excretion by the kidney (8). The work of Laragh and others thus revealed that hypertension is not a single mechanistic process, but still confirmed Goldblatt's original idea: production of renin by the kidney regulates blood pressure.

#### REFERENCES

1. Tigerstedt, R., and P. Bergmann. 1898. *Scand. Arch. Physiol.* 8:223–271.
2. Goldblatt, H., J. Lynch, R.F. Hanzel, and W.W. Summerville. 1934. *J. Exp. Med.* 59: 347–379.
3. Braun-Menendez, E., and J.C. Fasciolo. 1939. *Rev. Soc. Argent. Biol.* 15:420–425.
4. Page, I.H., and O.M. Helmer. 1939. *Proc. Center Soc. Clin. Invest.* 12:17.
5. Braun-Menendez, E., and I.H. Page. 1958. *Science*. 127:242.
6. Skeggs, L.T., Jr., W.H. Marsh, J.R. Kahn, and N.P. Shumway. 1954. *J. Exp. Med.* 99: 275–282.
7. Gavras, H., H.R. Brunner, J.H. Laragh, J.E. Sealey, I. Gavras, and R.A. Vukovich. 1974. *N. Engl. J. Med.* 291:817–821.
8. Laragh, J.H. 1973. *Am. J. Med.* 55:261–274.



Harry Goldblatt, 1964. Image provided by the National Library of Medicine.

Text by Heather L. Van Epps  
JEM News Editor; hvanepps@rockefeller.edu

JEM © The Rockefeller University Press \$8.00  
Vol. 201, No. 9, May 2, 2005 1351 www.jem.org/cgi/doi/10.1084/jem.2019fta

1351





# **RENAL ANEMIA HYPOXIA – INDUCIBLE FACTOR (HIF)**

**Dr. Allan J Erslev, Dr. Gregg L Semenza,  
Dr. Peter J Ratcliffe, Dr. William G Kaelin Jr.**



**Renal anemia was elucidated by Allan J. Erslev (1953) through the discovery of erythropoietin deficiency in kidney disease**

**Hypoxia – Inducible Factor (HIF) in renal anaemia**



**Gregg L. Semenza (1992-1995)**

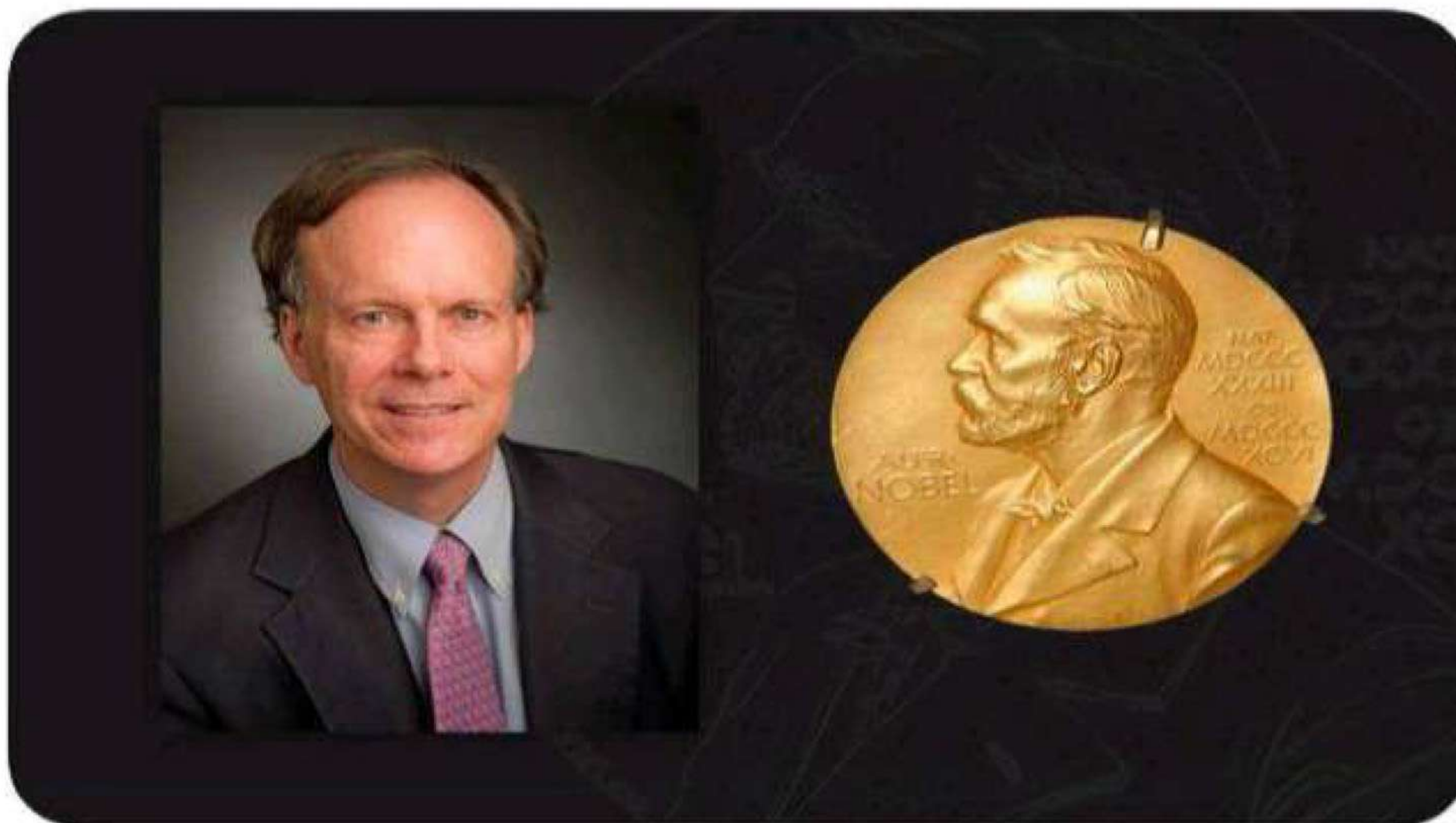
**Discovered HIF-1 and showed how hypoxia regulates Erythropoietin (EPO) gene expression**





**Sir Peter J. Ratcliffe**

**Demonstrated that oxygen sensing via HIF operates in the kidney, directly linking HIF to renal EPO production and renal anaemia**



**William G. Kaelin Jr.**

**Elucidated the VHL – HIF degradation pathway, explaining how HIF is regulated by oxygen**





# **KIDNEY PERFUSION SOLUTION HTK (HISTIDINE-TRYPTOPHAN- KETOGLUTARATE)**

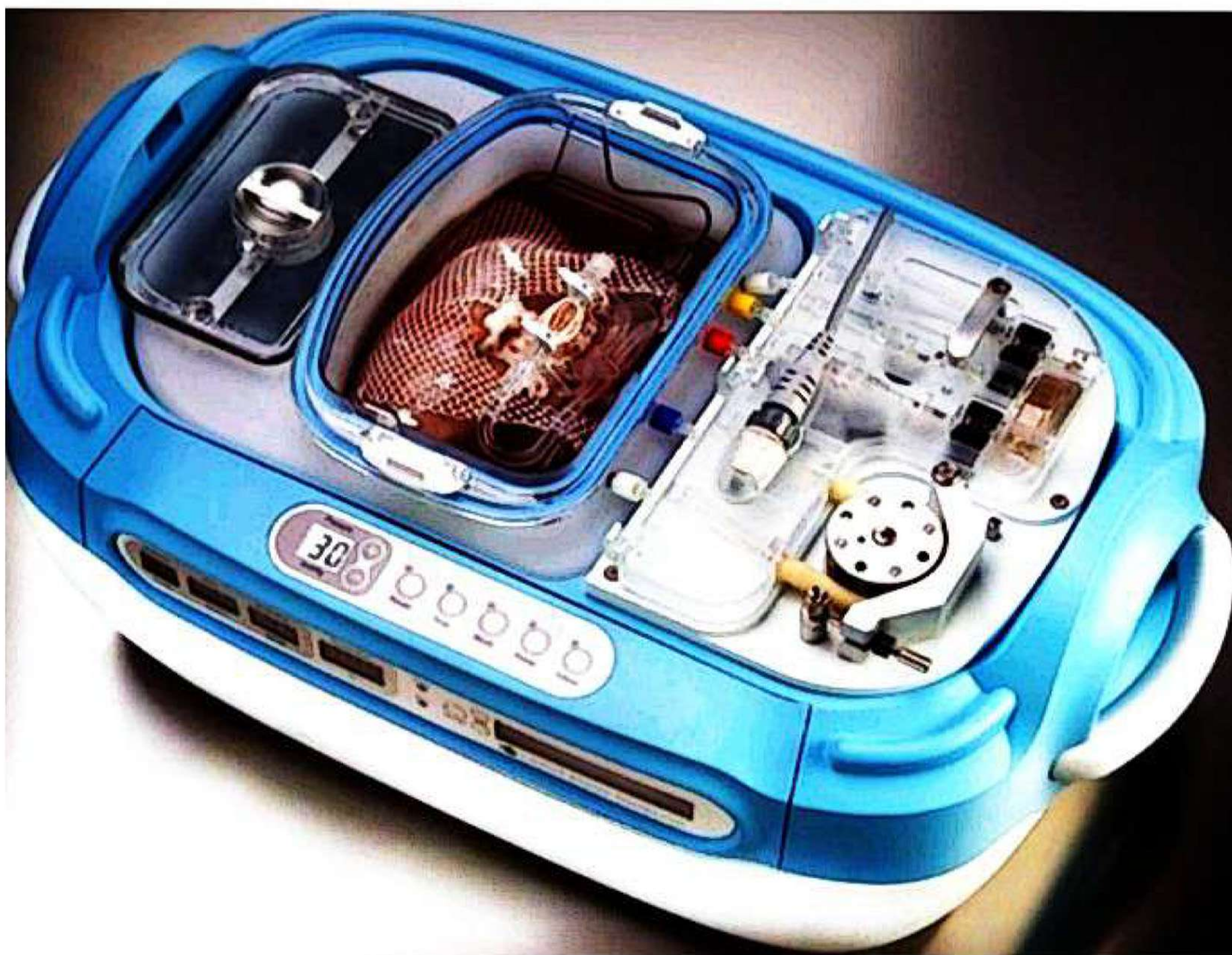
Prof. Hans Jurgen Bretschneider



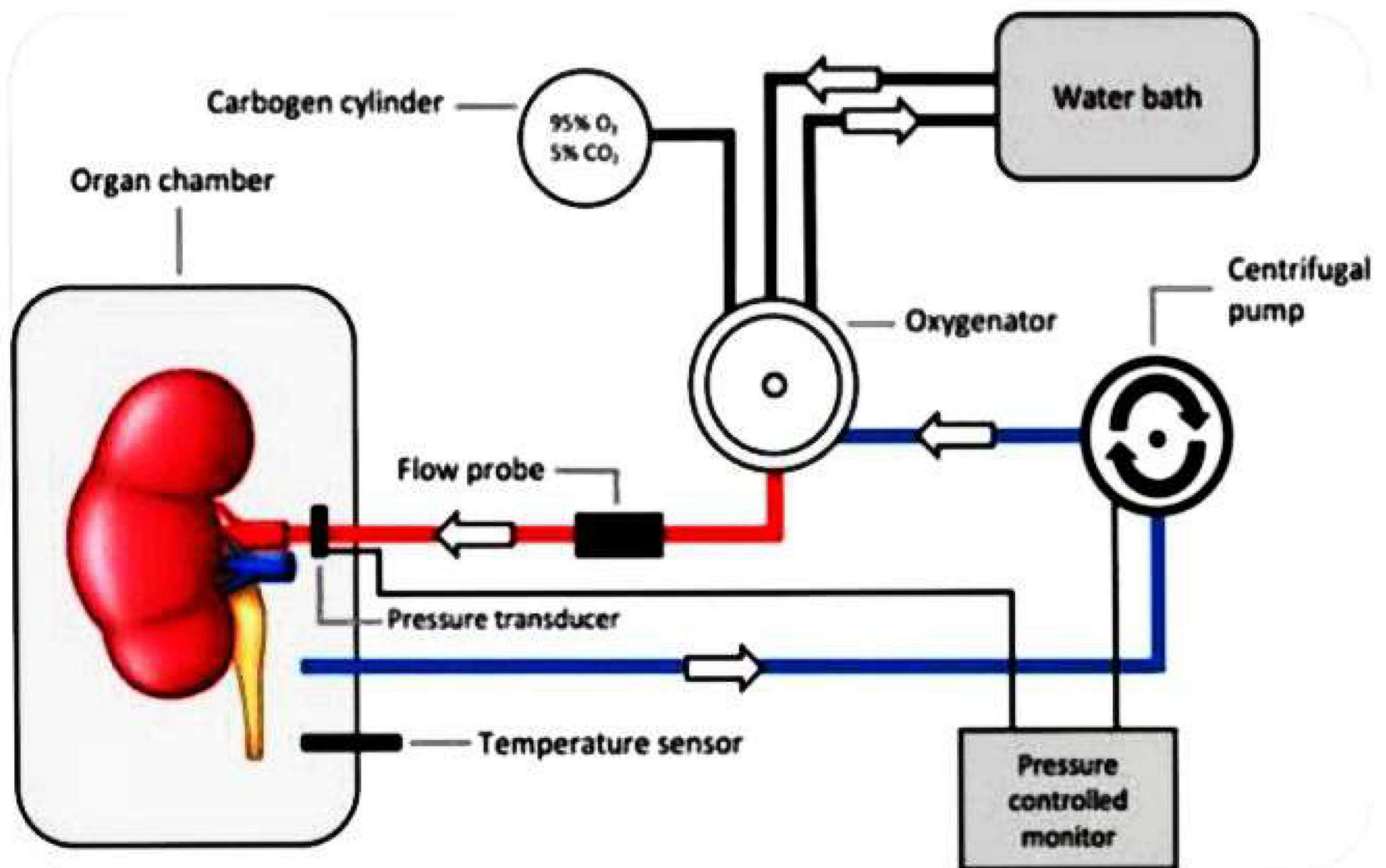


## **Prof. Hans –Jurgen Bretschneider**

**The German Physiologist who initially developed the HTK (histidine-tryptophan-ketoglutarate ) perfusion / preservation solution used in organ transplanting, including kidneys**







[INDEX](#)



# **ULTRA PURE DIALYSIS FLUID AND WATER STANDARDS**

Dr. Bernard Canuad





- ▶ **Ultra-pure water itself was not “discovered” by a single person.**
- ▶ **The dialysis ultra-pure dialysate concept was strongly advanced by Bernard Canaud and European nephrologists in the 1990s.**



**Bernard Canaud,  
French Nephrologist**

**Bernard Canaud, the Nephrologist widely associated with advancing ultra-pure dialysis fluid and water standards in hemodialysis.**



# **“Ultrapure Water” in Dialysis?**

**Water that meets**

**Stricter microbiological standards than  
Conventional dialysis water.**

- **Bacterial count : < 0.1CFU/mL**
- **Endotoxin level : <0.03 EU/mL**

*Limulus Amebocyte Lysate (LAL)*

**“Ultrapure dialysate improves biocompatibility –  
its disadvantages are economic, not clinical”.**

***Today's luxury is tomorrow's necessity!***

**INDEX**





# **HYPOMAGNESEMIA AN UNDERESTIMATED ENTITY !**

Dr. Humphry Davy, Dr. Arthur D Hirschfelder  
& Dr. Victor G Haury





## **Sir Humphry Davy (1778-1829)**

Pioneering English Chemist

**Sir Humphry Davy**, (1778-1829) was a pioneering English Chemist and inventor known for his work in electrochemistry, discovering or isolating elements such as potassium, sodium, calcium, magnesium and others.

## **1940s — Clinical Hypomagnesemia Recognized**

Arthur D. Hirschfelder

- Described neuromuscular irritability in magnesium deficiency
- Established hypomagnesemia as a clinical syndrome



# **Archives of Internal Medicine (1934)**

Clinical Manifestations of High and Low Plasma  
Magnesium Dangers of Epsom Salt Purgation in  
Nephritis

Arthur D. Hirschfelder, M.D.  
Victor G. Haury, M.D.

Arch Intern Med. 1934; 53:859-872

## **1980s — Transplant Electrolyte Disorders**

- Introduction of Cyclosporine
- Recognition of post- transplant hypomagnesemia .  
Calcineurin inhibitor- induced renal Mg wasting  
described

INDEX





# **IGA – GN BUDESONIDE**

Dr. Jean Berger





**Dr. Jean Berger (1921-2011)**  
French Nephrologist & Renal Pathologist

- **First described in 1968 (Paris)**
- **Mesangial IgA deposits on immunofluorescence**
- **Recurrent synpharyngitic hematuria**

**Budesonide targets Peyer's patches in the distal ileum, reducing pathogenic IgA production**

**Budesonide acts at the source of abnormal IgA production (gut) rather than broadly suppressing systemic immunity**

**Evidence**  
**Major trial: NEFIGARD Trial**

**INDEX**





# **MANAGEMENT OF DIABETIC NEPHROPATHY – FINERENONE**

Dr. Peter Kolkhof



# Finerenone was discovered by Dr. Peter Kolkhof and colleagues at Bayer AG - 2014



**Dr. Peter Kolkhof**  
pharmacologist and principal scientist  
at Bayer AG, Germany

## Scientific significance

**Finerenone represents a third – generation mineralocorticoid receptor antagonist, developed to improve cardio –renal outcomes**

**Kolkhof, et al. (2014)**

**“Finerenone (Bay 94-8862): a novel selective non – steroidal mineralocorticoid receptor antagonist”.**

***Published in Journal of Pharmacology and Experimental Therapeutics.***

**INDEX**



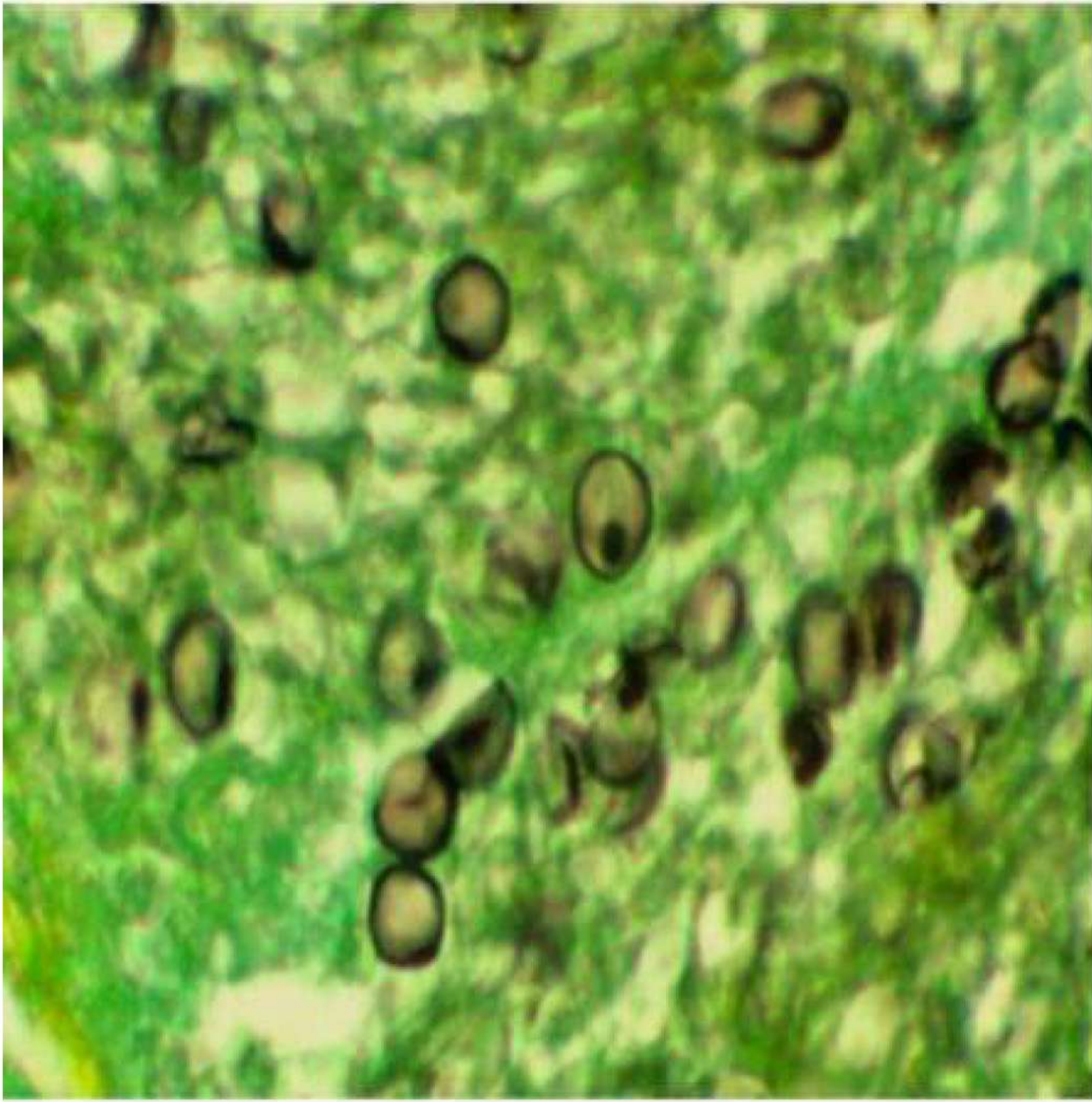


# **PNEUMOCYSTIS PNEUMONIA – PCP PNEUMOCYSTIS JIROVECII**

Dr. Otto Jirovec & Dr. Carlos Chagas







 **Grocott-Gomori  
Methenamine Silver (GMS)  
stain**

- Highlights cyst walls in **black**
- Classic "**cup-shaped / crushed ping-pong ball**" appearance

- 1909: Carlos Chagas observed the organism in guinea pigs.
- 1951-1952: Otto Jirovec proved - it causes human pneumonia.

*"Pneumocystis pneumonia in humans was described by Otto Jirovec in 1952."*

1999: Human species officially named *Pneumocystis jirovecii* in honor of ***Otto Jirovec*** .



# Otto Jírovec



**Dr. Otto Jirovec (1907 -1972)**

**Czech parasitologist who played a key role in identifying the organism responsible for Pneumocystis pneumonia (PCP) in humans**

**Earlier, the organism in humans was incorrectly called Pneumocystis Carinii (the rat species)**

**Today the organism is known as  
Pneumocystis jirovecii**

**INDEX**



# **NSAID AND ACUTE KIDNEY INJURY**

**Dr. John Michael, Dr. Antony J Howie &  
Dr. D H Adams,**

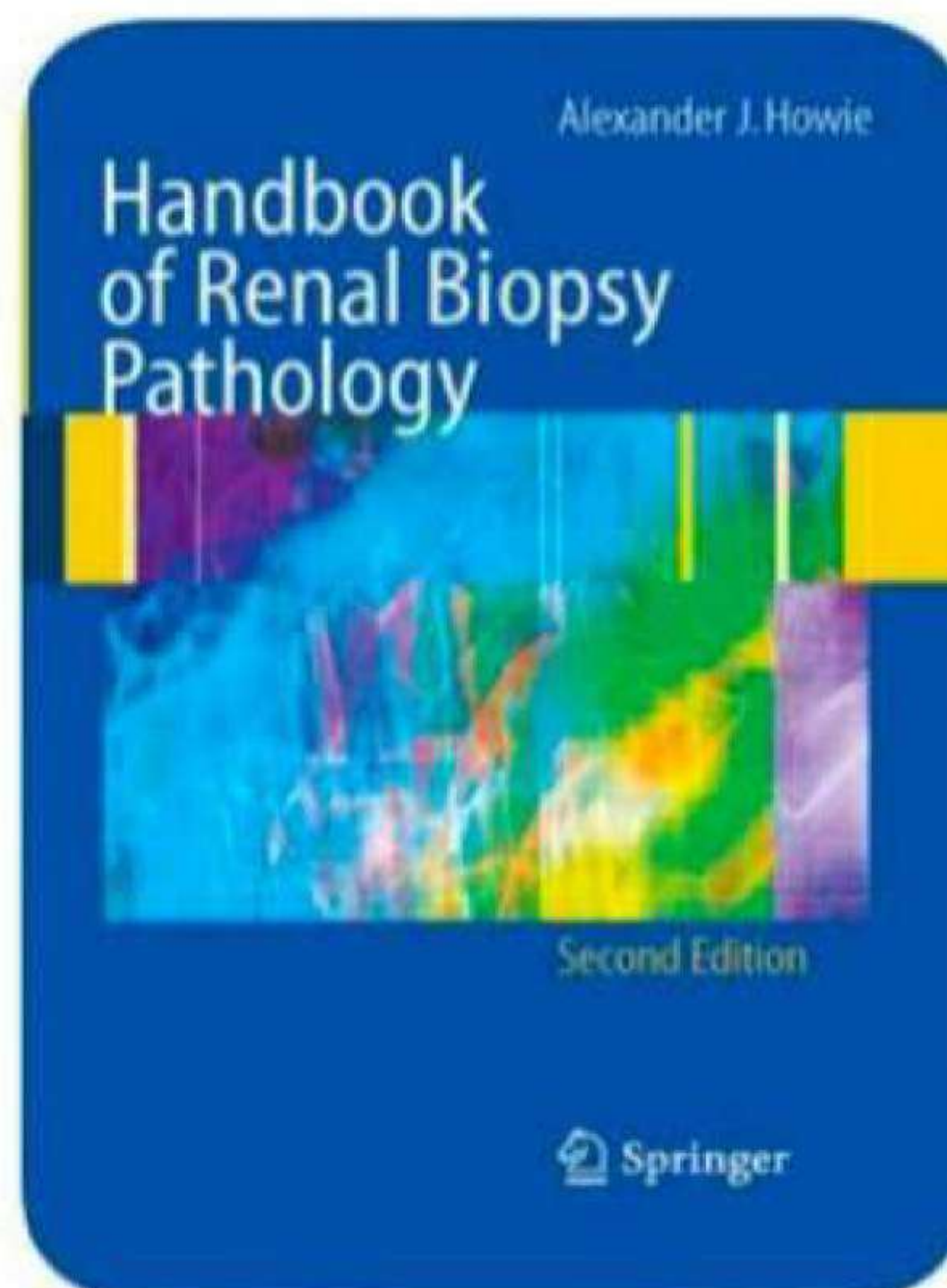
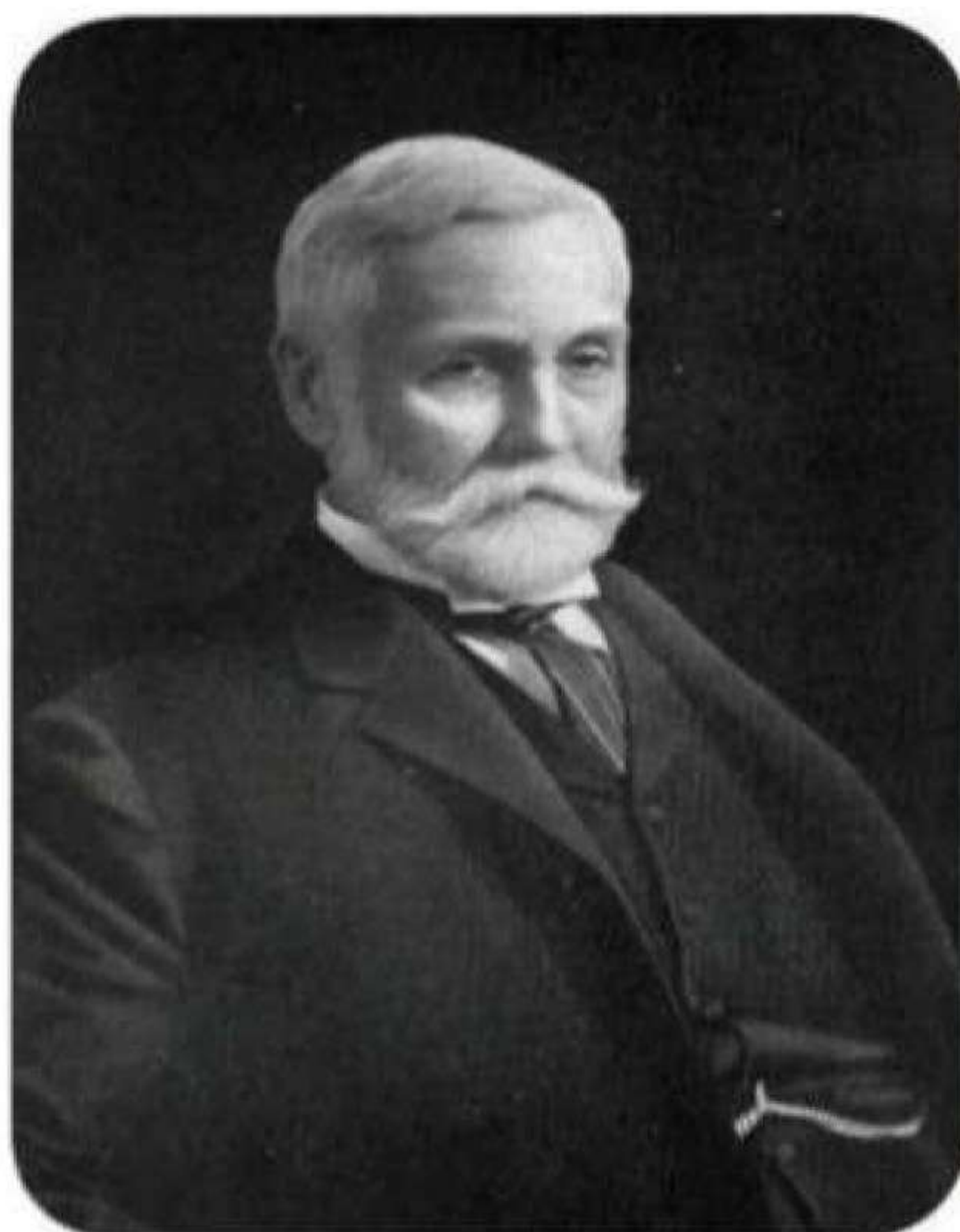


# Adams DH, Howie AJ, Michael J

- “Non –steroidal anti-inflammatory drugs and renal failure”  
.
- Published in The Lancet in 1986



***John Michael was a British Nephrologist***



**Anthony J. Howie is a renal pathologist from the United Kingdom who contributed to early clinical descriptions of renal injury associated with NSAIDs**





D.H. Adams was one of the clinicians involved in an important early clinical report describing renal failure associated with NSAIDs

**Old view:**

👉 NSAIDs → prostaglandin inhibition → reversible AKI

**New view:**

👉 NSAIDs → **hemodynamic + inflammatory + tubular + immune mechanisms**, with early detectable injury and strong interaction with comorbidities and other drugs

INDEX





**PROF. RAMDAS PISHARODY**



IN LOVING MEMORY



*Prof. Ramdas Pisharody*

Senior Nephrologist  
Former Principal (2008 – 2015)  
Medical College Trivandrum

**D. O. D: 29 – 03 – 2017**

*Remembering him on his 9th death anniversary*

A dedicated clinician, inspiring teacher,  
and compassionate human being.

Though years have passed,  
his legacy continues  
to guide and inspire us.

*Forever remembered • Deeply missed*





## **Nephrology Training under Prof. K.S. Chugh**

***MBBS – MCH TVM  
MD, DM Nephro – PGIMER, Chandigarh  
Masters- Canada  
FRCP (Glasgow)***

***Excellent Nephrology Department  
DM Examiner  
Trained @21 DM Nephros***

***Initiated KNOS  
Multi Super specialty Block – MCH TVM***

***Sr. Consultant Nephrologist at KIMS and SUT Hospitals***



**INDEX**





# **STREPTOMYCES (FILAMENTOUS BACTERIA)**



# **Can a bacteria be a legend in history of an antibiotic**

**Yes – very much so. In microbiology, certain bacteria become “legends” because of their pivotal role in the discovery, development, or understanding of antibiotics.**

**A classic example is *Staphylococcus aureus*.**

- **It played a key role in the discovery of Pencillin by Alexander Fleming in 1928**

**Fosfomycin was discovered in 1969 by researchers at the Spanish pharmaceutical company Compania Espanola de Penicilina Y Antibioticos (CEPA)**

**Key Scientists involved:**

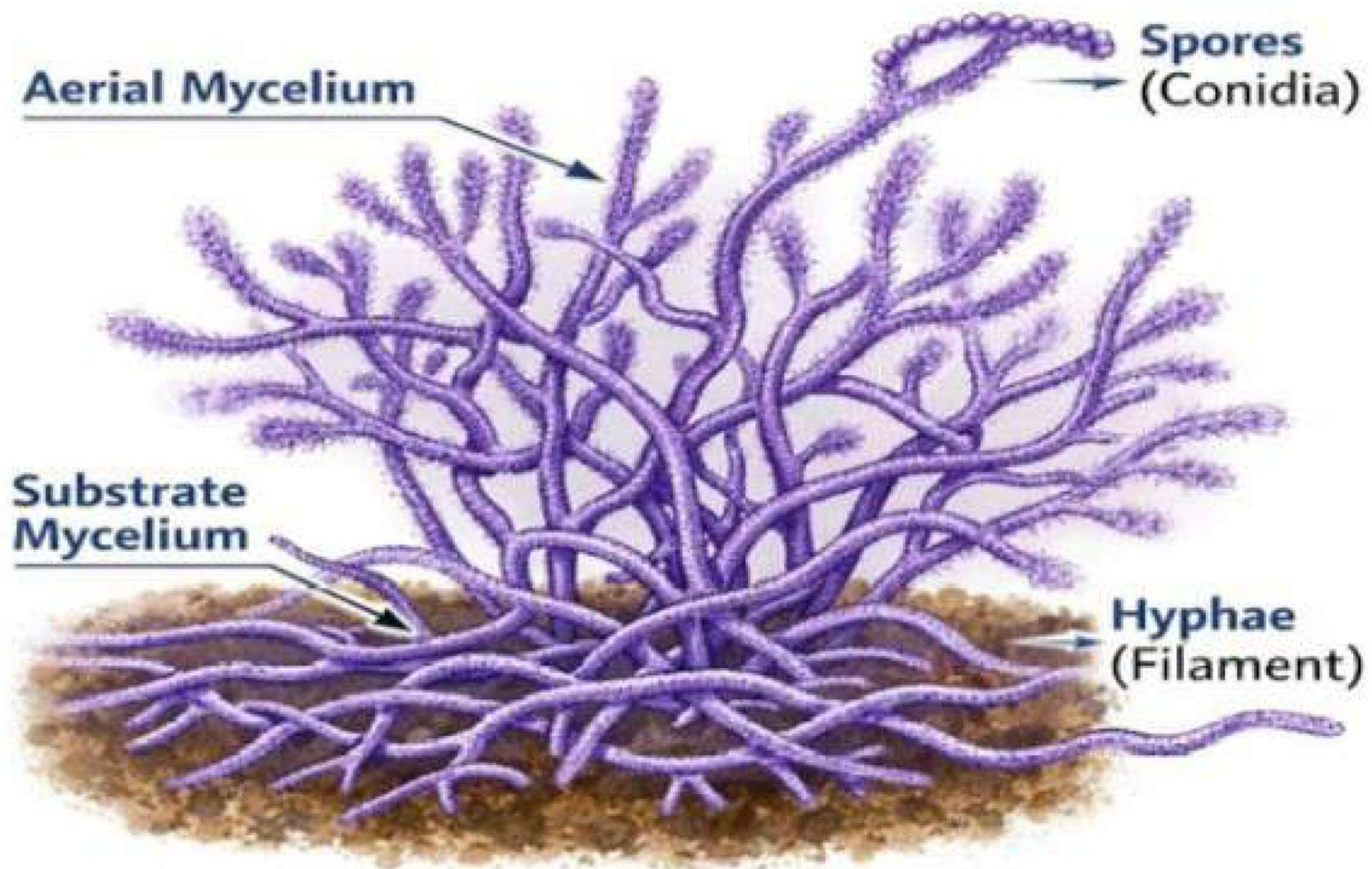
- **Antonio Rodriguez**
- **Santos Mata.**

**They isolated fosfomycin from *Streptomyces* Species (soil Bacteria), initially named:**

**“ Phosphonomycin”**



## ***Streptomyces*** (Filamentous Bacteria)



## **Historical Significance**

- One of the first antibiotics with a unique mechanism (MurA inhibition)
- Rediscovered importance today due to multidrug-resistant (MDR) infections





# **HYPERTENSIVE CRISIS**

**Dr. Nikolai Korotkov**



# Milestones in the Discovery of Hypertension

- 1733 – Stephen Hales  
→ First measurement of blood pressure (animal experiment)
- 1896 – Scipione Riva Rocci  
→ Invented mercury sphygmomanometer
- 1905 – Nikolai Korotkoff  
→ Discovered Korotkoff sounds (SBP & DBP measurement)

*Nephrol Dial Transplant* (1998) 13: 1041–1043

## *Historical Notes*

(Section Editor: J. S. Cameron)

## **Nephrology Dialysis Transplantation**

### **Dr N. S. Korotkov: the low-pitch sounds that stand high**

A. V. Nabokov and A. I. Nevorotin

Pavlov State Medical University, St Petersburg, Russia

#### **Dr N. S. Korotkov**

Blood pressure (BP) measurement is believed to be one of the most frequently used diagnostic tests in medicine. It is due to the Russian surgeon, Nikolai Sergeyevich Korotkov (the alternative spelling is Korotkoff), that the technique in its current setup is both simple and precise enough to be routinely performed, via sphygmomanometry, by a person armed with a stethoscope. There is a major gap, however, between our knowledge of the technique itself, on the one hand, and the personality of the man who introduced it at the beginning of this century, on the other. A few Russian-language journal papers, a single booklet [1], and the only authentic photographic portrait (Figure 1) presented for the first time as late as half a century after the man's demise [2], can be considered but symbolic gratitude toward the person who had done so much for us. As to the published data outside Russia, the original biographical materials had been collected and summarized by Segall [3–7] followed by a few reports of other authors [8,9]. In the present paper we offer a summary of the essential facts of Korotkov's life, in particular, concerning his discovery, as well as the disastrous events that haunted the man persistently and led eventually to his premature end.

N. S. Korotkov was born on 26 February 1874, in the Mid-Russian city of Kursk. He was a son of an undistinguished merchant. In 1893, after finishing secondary school (*gymnasium*), he entered the Medical Faculty of the Kharkov University and three semesters later changed it for the most renowned medical school in the then Russia, the Medical Faculty of Moscow University. He graduated, with distinction, late in 1898. Due to red-tape, obstacles, and delays, only in 1900 could the bright youth be accepted as a supernumerary (unpaid, or freelance) ordinator (resident intern) at the Surgical Clinic of his *alma mater*. Since neither private diaries nor any of Korotkov's friends' notes are available, the genuine reasons for his following career moves, that is, the voluntary missions to

serve as a surgeon at the Red Cross units in the Far East during the Boxer Rebellion (1900) and later during the Russo-Japanese War (1904–1905), remain obscure. What might the motivation have been? Was it longing for deep involvement in surgical practice, desire for money on which to live, a wish to test himself for firmness and toughness, or on the other hand a lack of ambition for immediate promotion and making or marrying money (in 1904 Korotkov married a nurse who shared all his hardships with him)—the



Fig. 1. Nikolai S. Korotkov, soon after graduating from the Moscow University.

Correspondence and offprint requests to: Prof. A. I. Nevorotin, Research Center, Pavlov State Medical University, 6/8 Leo Tolstoy Street, 197022 St Petersburg, Russia.

© 1998 European Renal Association–European Dialysis and Transplant Association





**“From sound to science – Korotkof transformed blood pressure into a measurable clinical vital sign.”**

### **Legacy**

- **Foundation of modern non-invasive BP measurement**
- **Still the gold standard in clinical practice**

**Conclusion: Hypertension evolved from a physiological observation → measurable clinical disease**





# **POLYARTERITIS NODOSA (PAN)**

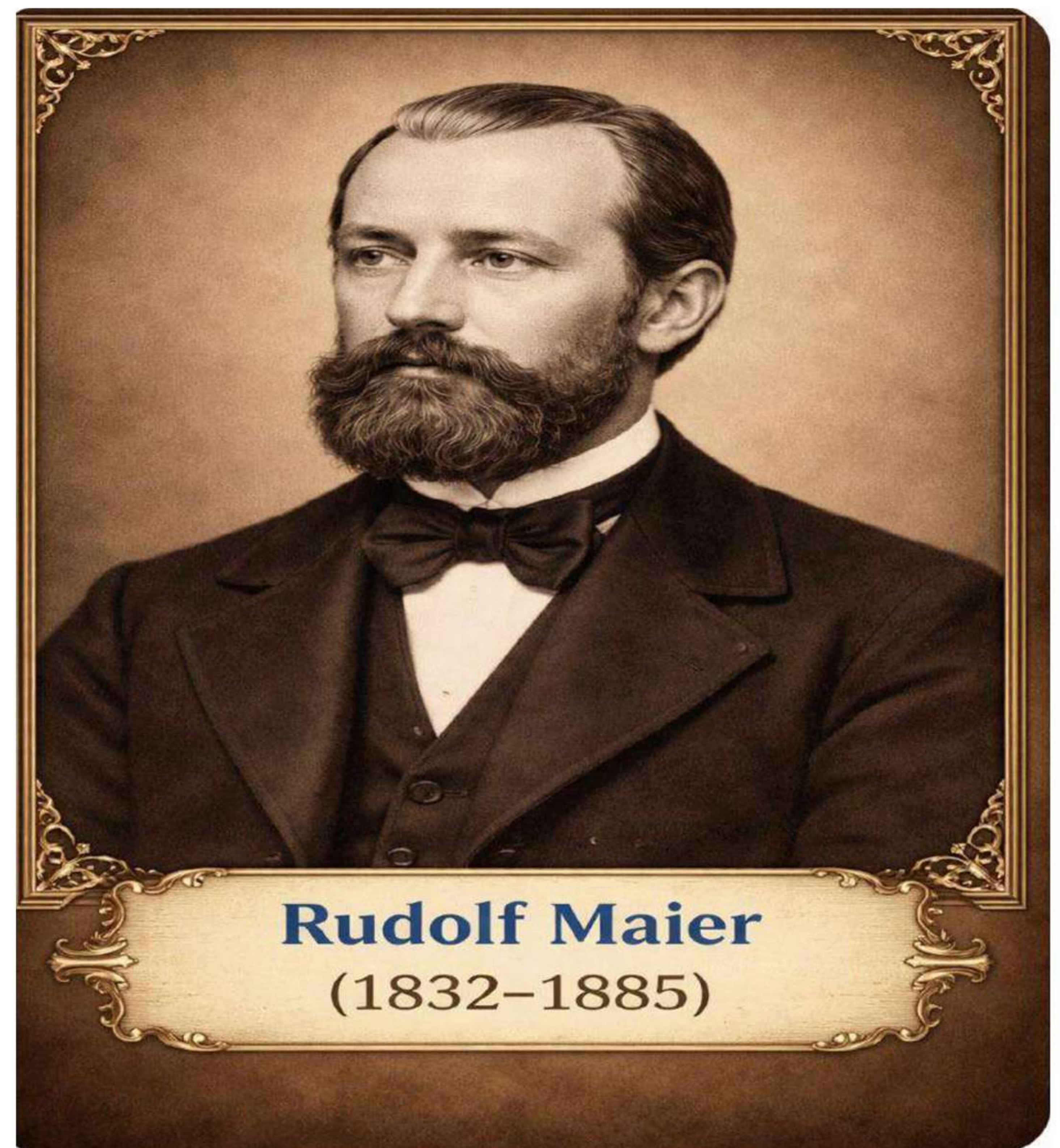
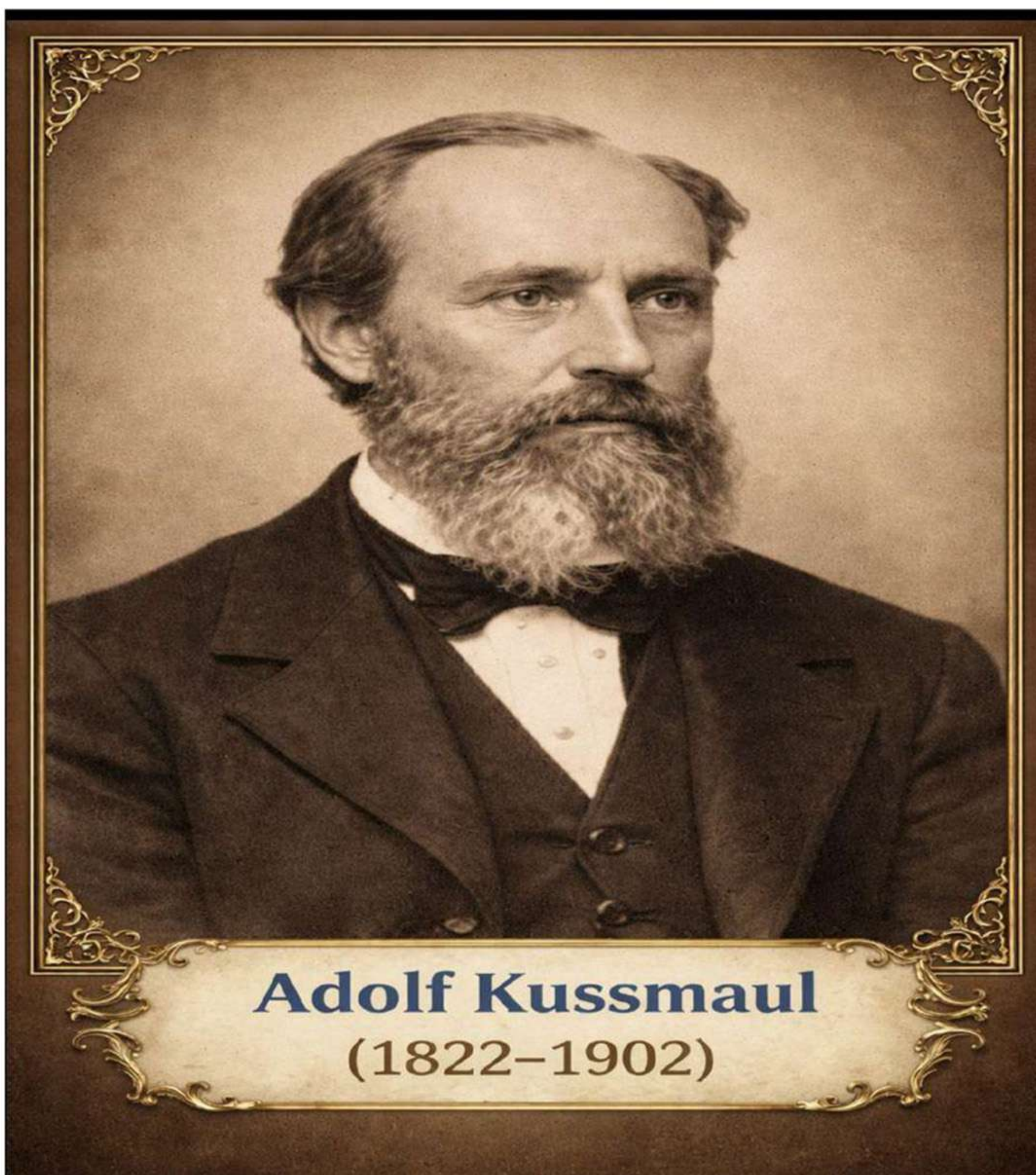
**Dr. Adolf Kussmaul & Dr. Rudolf Maier**



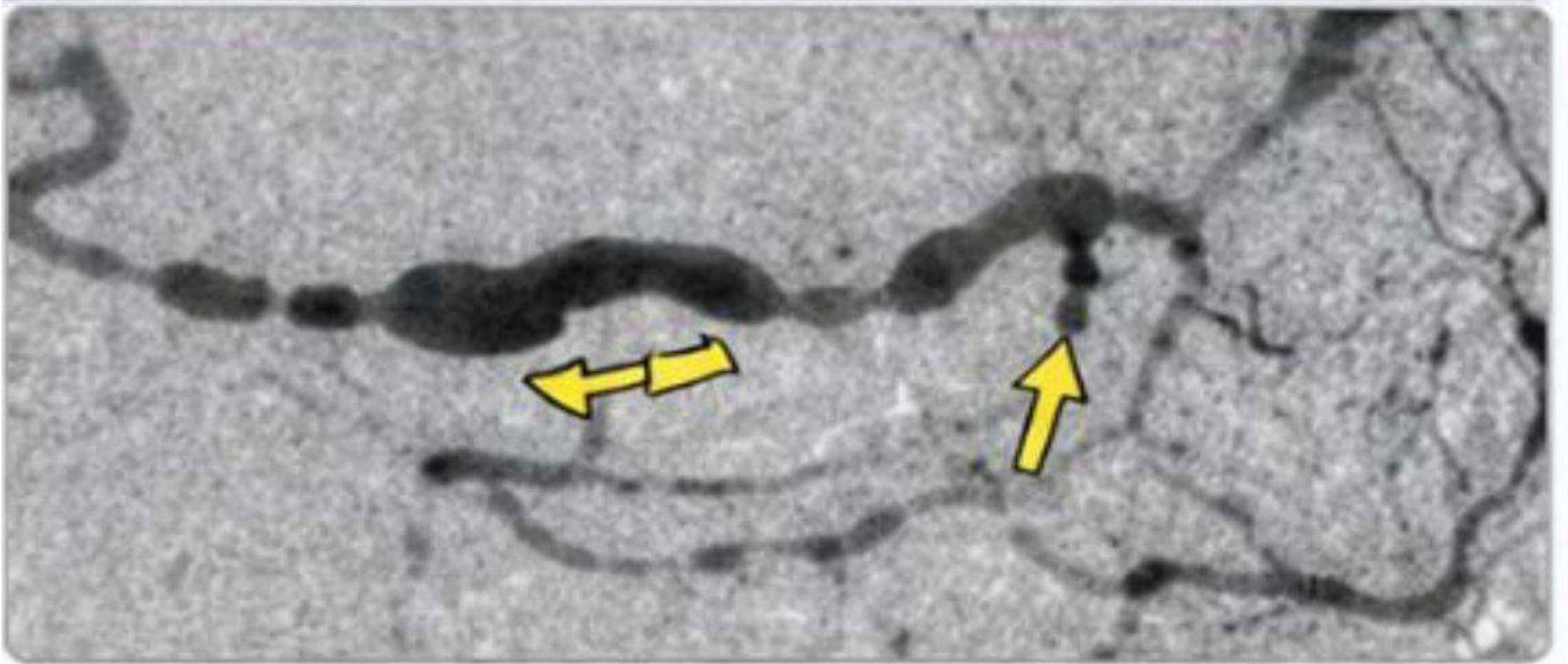
- First described in 1866 by

**Adolf Kussmaul, German Physician**  
**Rudolf Maier, German Pathologist**

- Initially termed “periarteritis nodosa”
- Named for nodular lesions along inflamed arteries







*Alternating stenosis and aneurysmal dilatation*

- **Multiple microaneurysms→**  
Small round outpouchings along arteries
- **Alternating stenosis + dilatation → gives the classic**
  - **“string of beads / rosary sign”**

INDEX



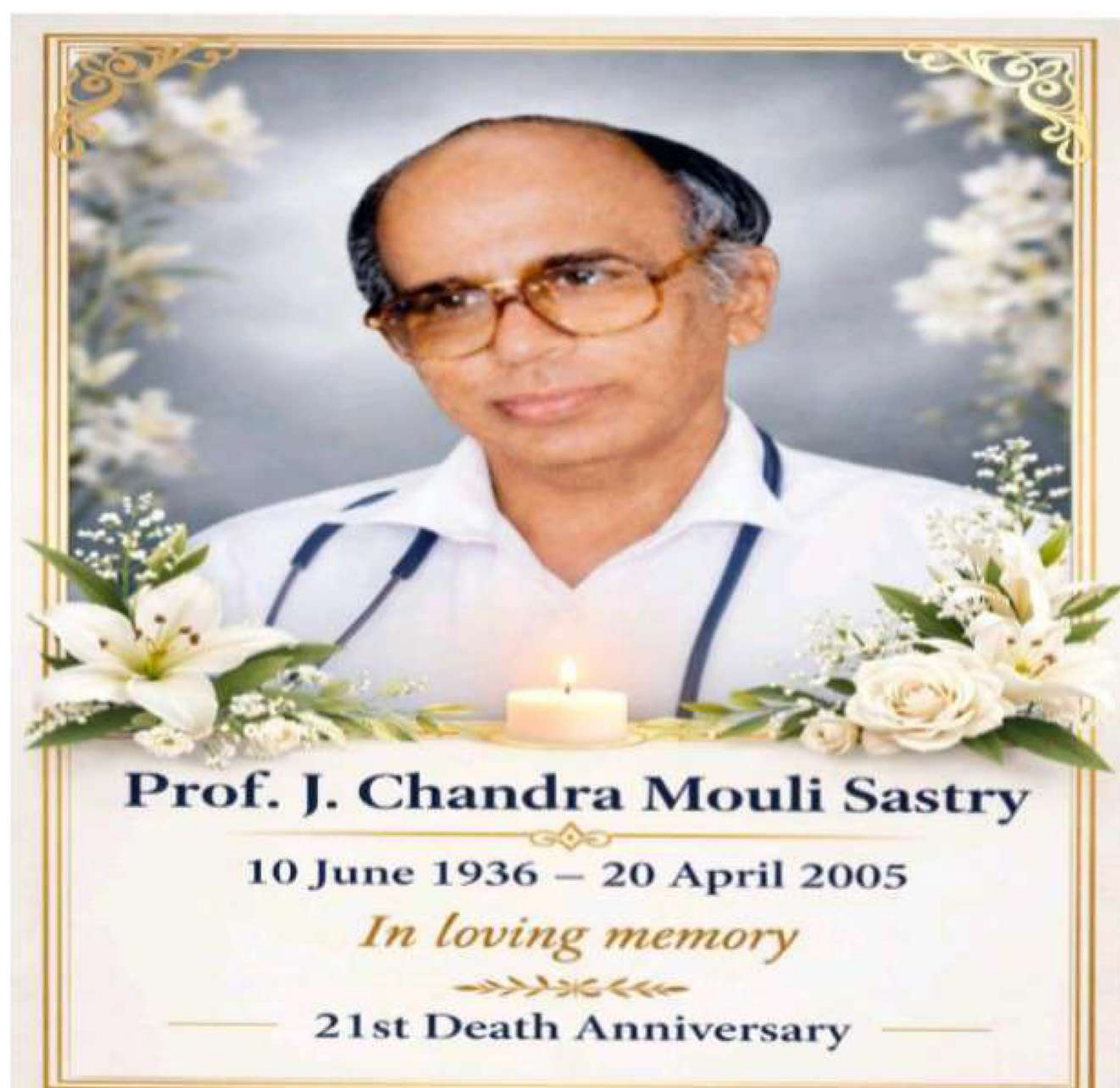


**PROF. J. CHANDRA MOULI SASTRY**

Dr. JCM Sastry







CHRISTIAN MEDICAL COLLEGE, VELLORE  
*"Not to be ministered unto, but to minister"*

**PROF. J. C. M. SASTRY**  
— 1936 - 2005 —  
*Pioneer. Teacher. Mentor. Visionary.*

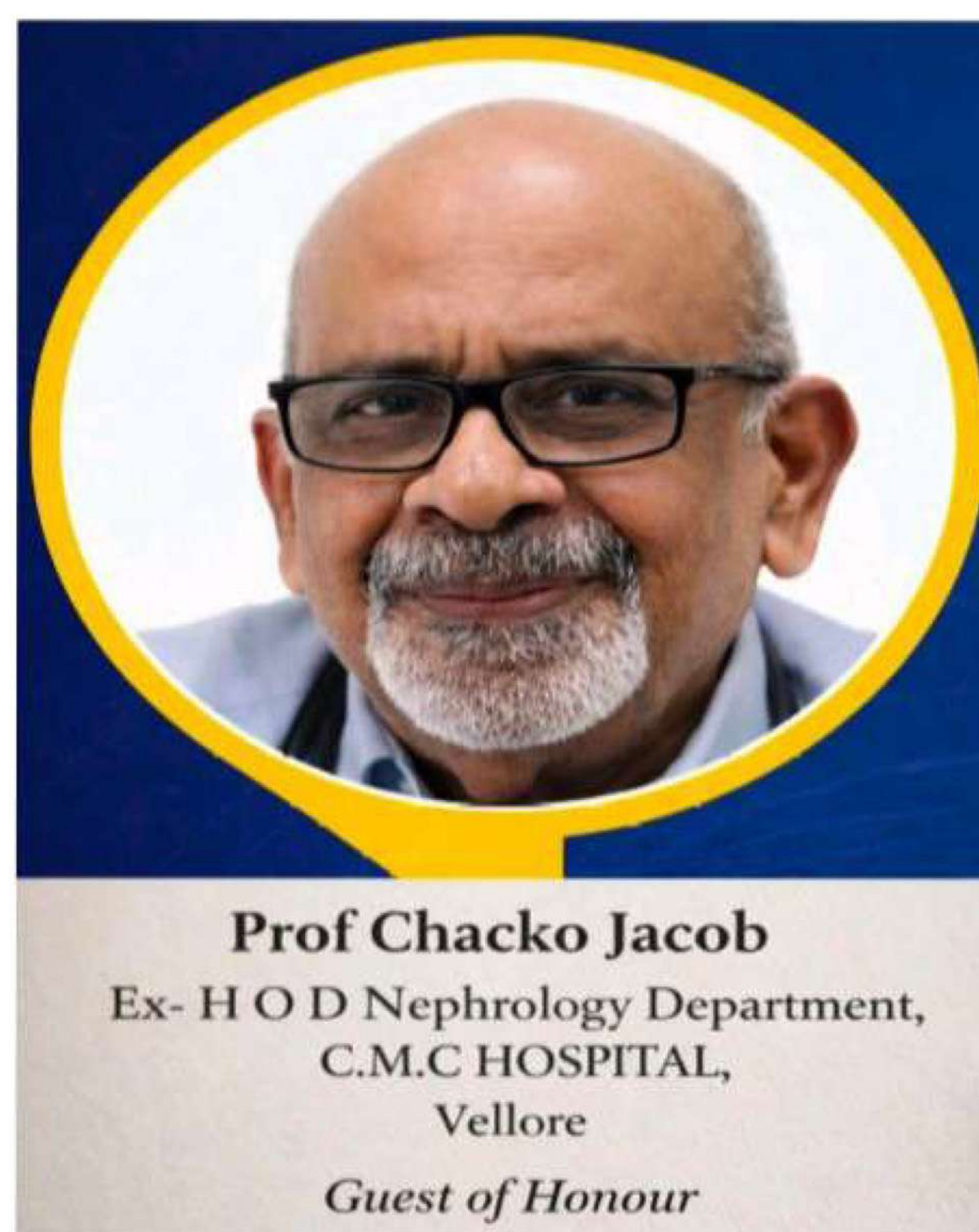
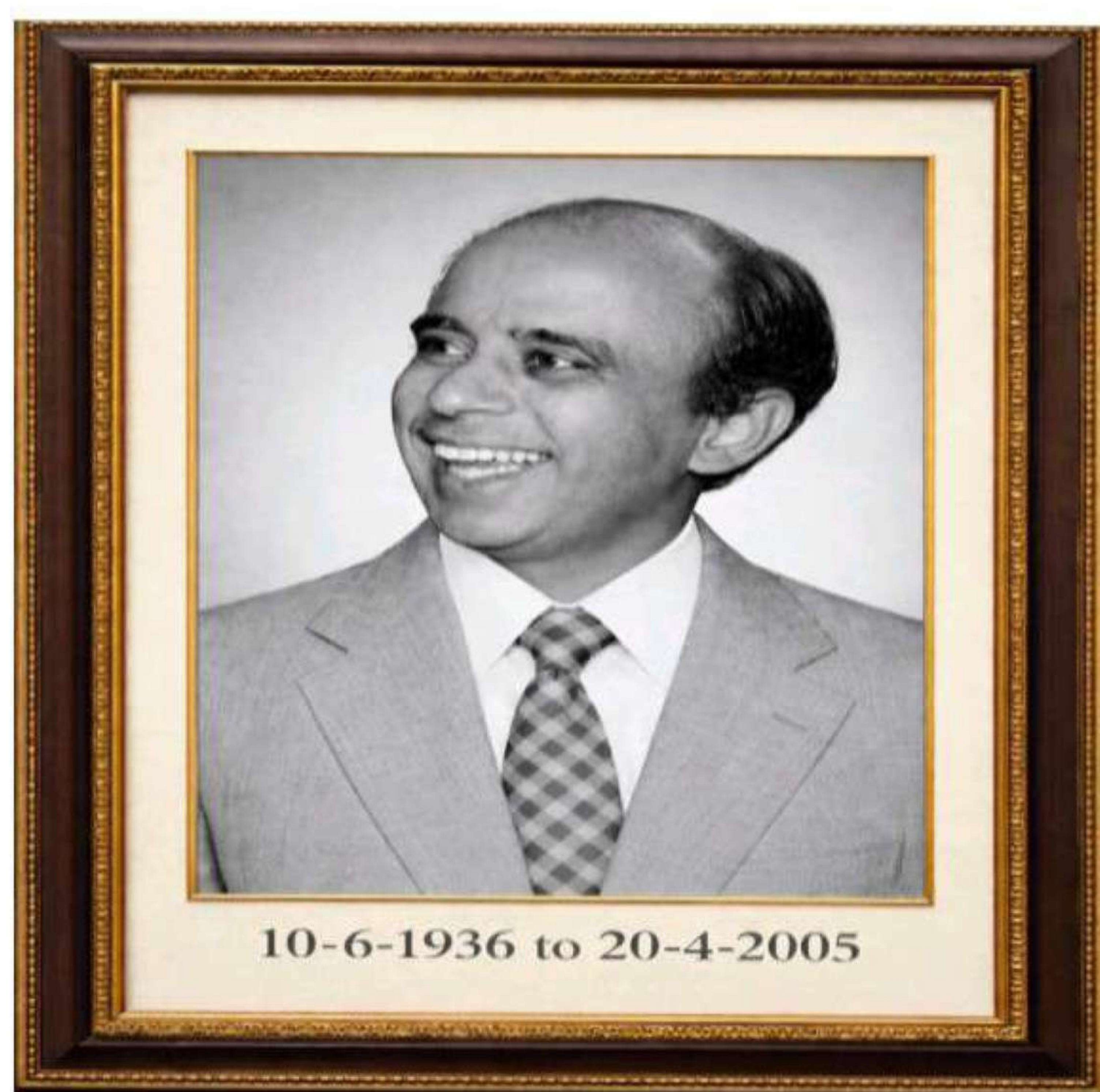
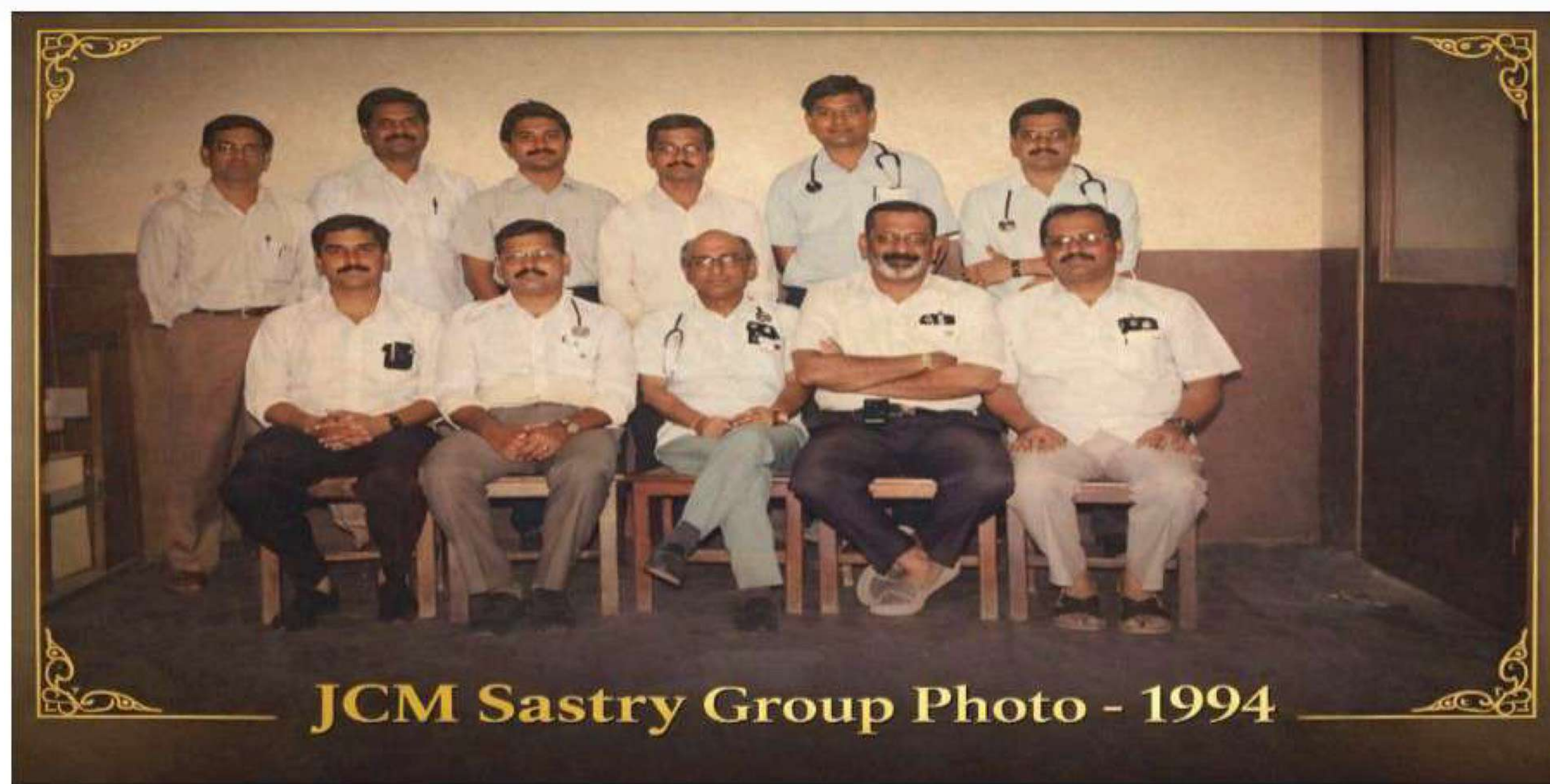
**Founding Professor of Nephrology, CMC Vellore**

- Joined CMC Vellore in 1970  
Instrumental in establishing the  
**Department of Nephrology**
- Pioneer in **Nephrology training and  
Kidney Transplantation in India**
- Former President,  
**Indian Society of Nephrology**
- Trained generations of nephrologists  
who went on to lead across India

*"A man of deep faith, boundless compassion,  
and an unwavering commitment to excellence in clinical care and teaching."*

IN GRATEFUL REMEMBRANCE OF A LIFE  
10-6-1936 to 20-4-2005





*True learning  
begins with guidance,  
and grows with gratitude.*





# **RENIN ANGIOTENSIN & ALDOSTERONE (RAAS) POTASSIUM BINDERS**

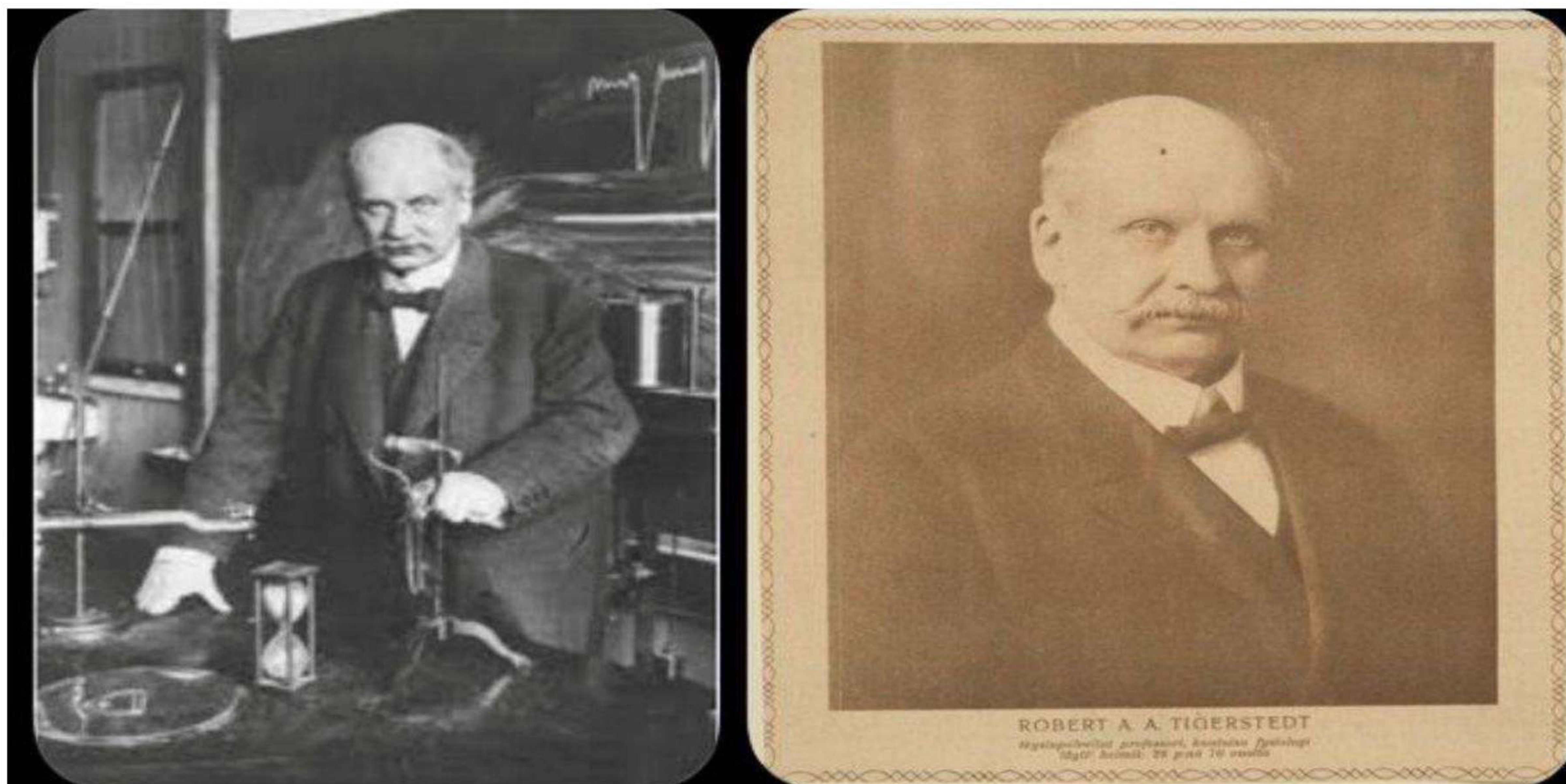
Dr. Robert A. A Tigerstedt, Dr. Irvine H. Page



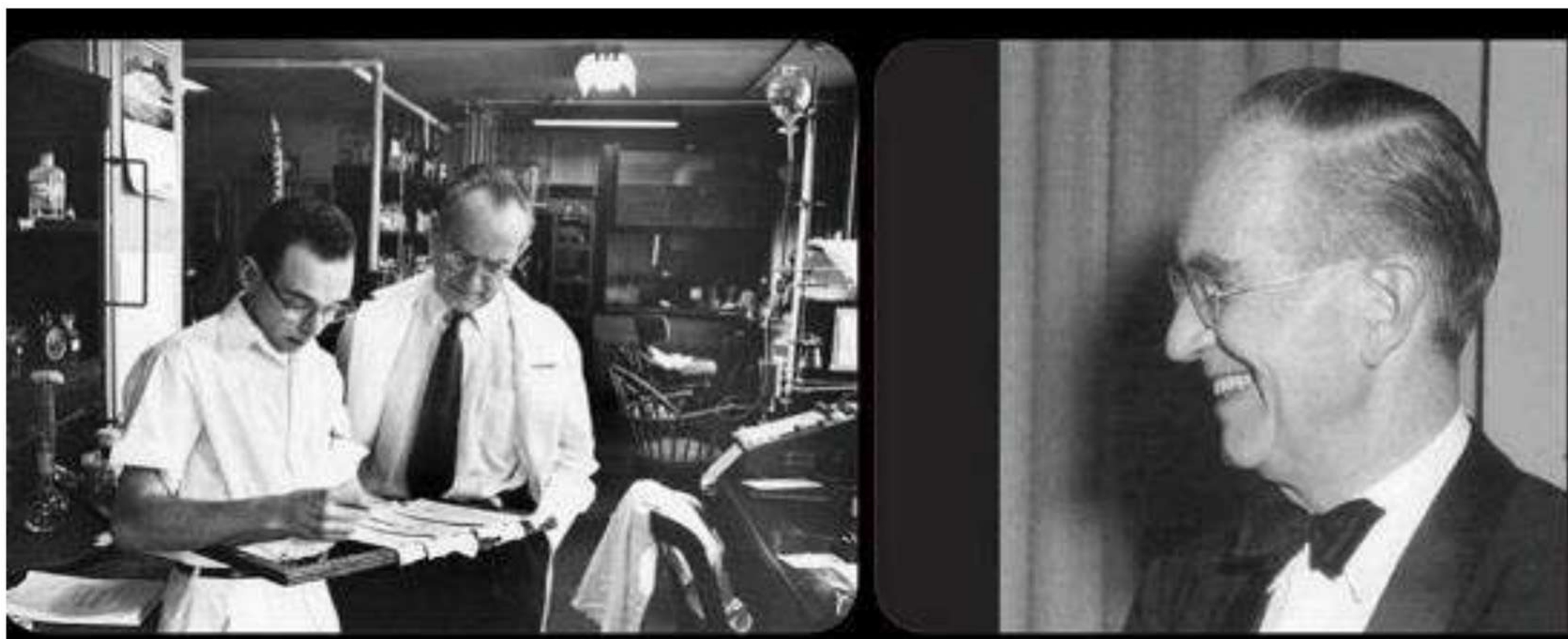
**Potassium binders were first introduced in 1958 with sodium polystyrene sulfonate by Schubert**

- **Patiromer – developed in the 2010s**
- **Sodium zirconium cyclosilicate (ZS-9) – developed later, inorganic crystal binder**

**Robert Tigerstedt, the Finnish Physiologist who described renin in 1898 (with Per Bergman)**



**Irvine H. Page, the American physiologist who co-described angiotensin**





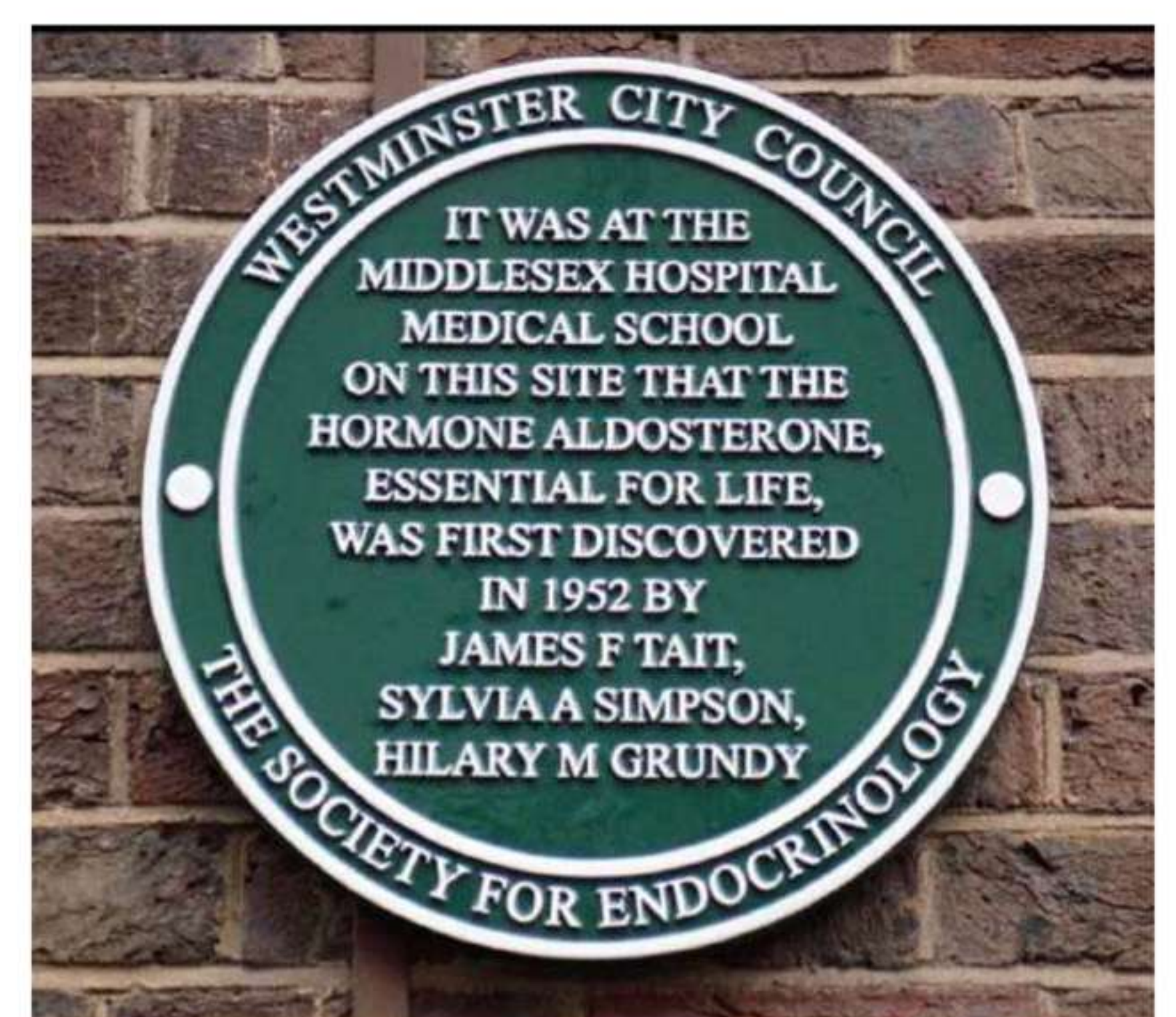
**Aldosterone** was discovered in **1953** by **James F. Tait** and **Sylvia .S. Tait**, working with **S.A. Simpson**.

- Initially it was called “**electrocortin**”

### Why “electrocortin”?

Early experiments showed the hormone caused **sodium retention** and **potassium excretion**.

- The hormone was later named “**aldosterone**” in **1954**



## How the name changed

- Once its **Chemical structure** was identified, it was renamed **aldosterone**:
- “Aldo–” → presence of an **aldehyde group**
- “-sterone” → steroid structure

INDEX





# **GRANULOMATOSIS WITH POLYANGIITIS (GPA )**

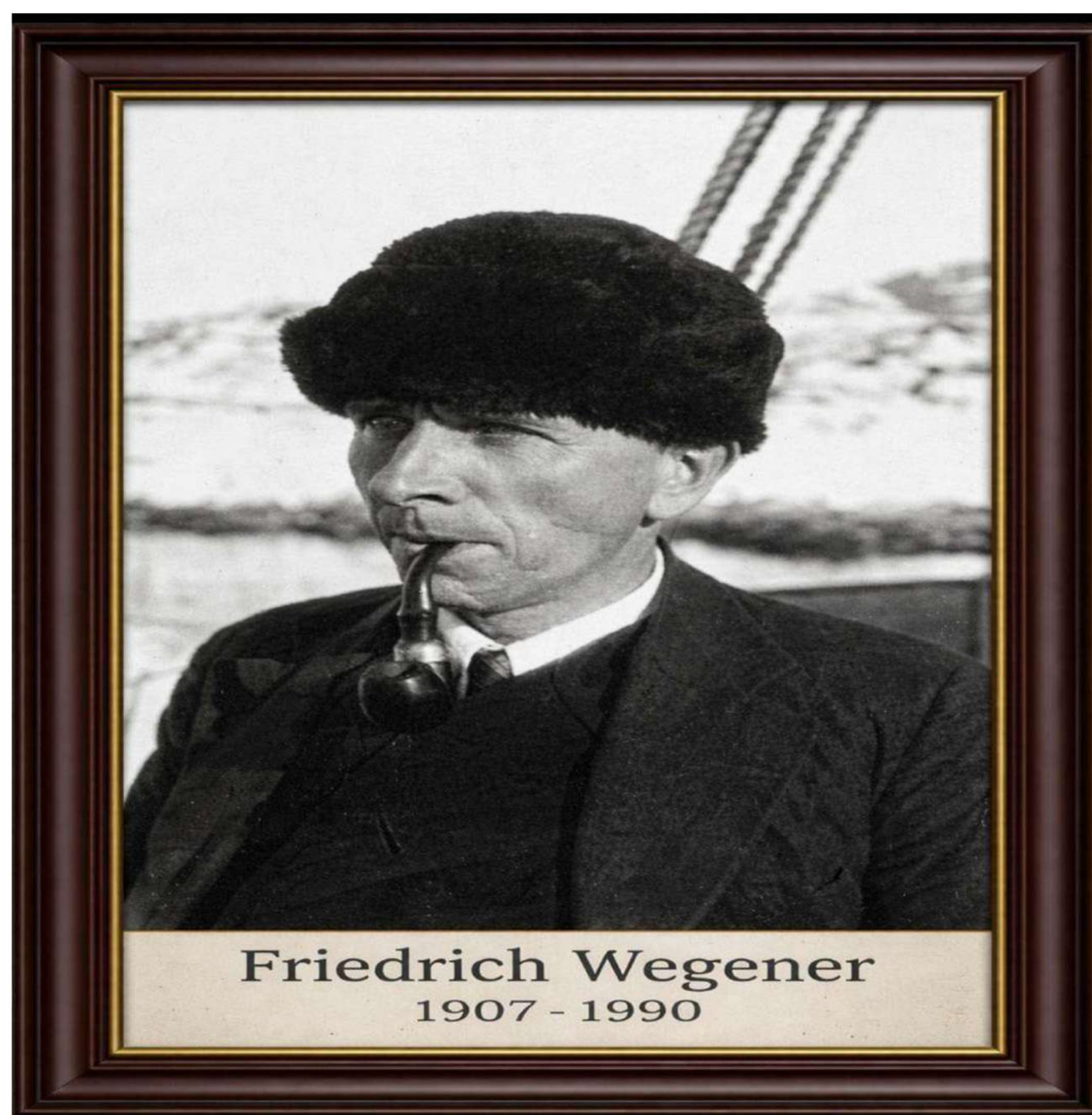
Dr. Friedrich Wegener



# ***Granulomatosis with polyangiitis (GPA)***

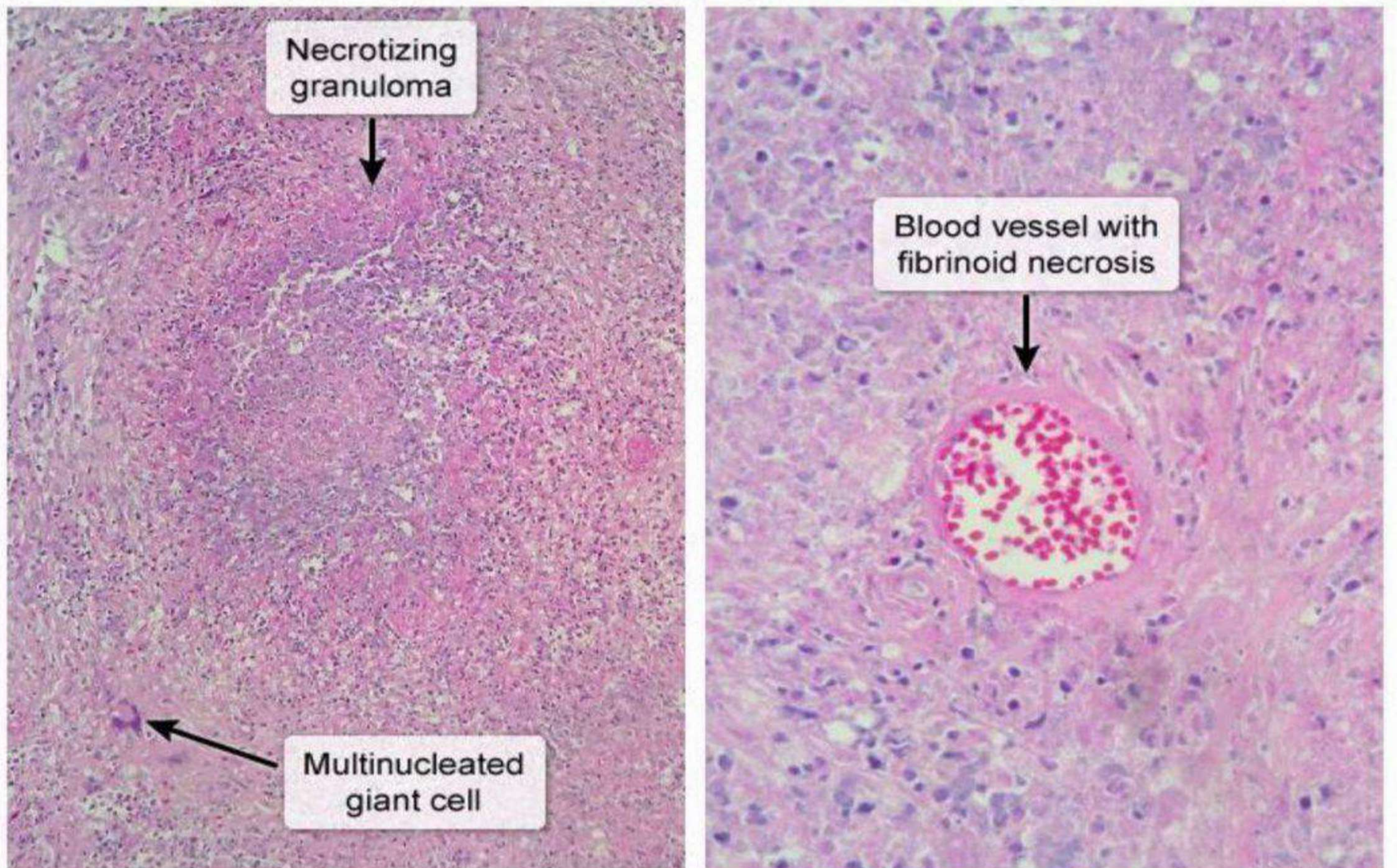
**A Multisystem ANCA – Associated Small Vessel Vasculitis**

- Formerly known as **Wegener's Granulomatosis**
- Characterized by necrotizing granulomatous inflammation and vasculitis





### Granulomatosis with polyangiitis



Lung

©UWorld

Wegener was named a “**Master Clinician**” by the American College of Chest Physicians in 1989. In the 2000s, medical societies replaced the eponym “**Wegener’s granulomatosis**” with “**granulomatosis with polyangiitis**” to dissociate the disease from his name. His case remains a key study



## 2026 Big Picture

### Main shift in GPA Rx:-

- less steroids,
- more biologics,
- more individualized therapy.

### But controversies remain around:-

- who gets what,
- how long, and
- at what cost / risk.

**The hardest GPA questions are no longer diagnosis alone**

### Now they are

- precision,
- duration,
- toxicity, and
- relapse prediction.

**INDEX**





**PROF. VIDHYA N. ACHARYA**



IN LOVING MEMORY



Prof Vidhya N Acharya

1938 - 2014



Remembering on her 12 yr of passing.



*Your legacy of knowledge, kindness and dedication  
will forever be our guiding light.*



**MBBS, MD,  
Seth GS Medical College and KEM Hospital Mumbai.**

**Nephrology training at University of Leeds**

**Firsts to her credit @King Edward VII Memorial (KEM) Hospital  
Nephrology Dept  
Transplantation unit  
Cd Tx  
PG Course**

**Rtd as Prof & HOD  
Sr. Consultant  
Director PG Studies  
Muljibhai Patel Urological Hospital  
Several Publications and Chapters in Books**

**Founder member, President of ISN ISOT  
International Federation of Kidney Disease (IFKF)  
Lifetime Achievement Award by ISN. The Pioneer Award  
Was an “Iron Lady”  
Good Discipline, Tough taskmaster, Able administrator  
and a Strong Motivator**

**Known as “Mother of Nephrology”**

**Tough times don't last, tough people do!**





*A Pioneer. A Teacher. A Trailblazer.  
An Inspiration Forever.*

REMEMBERING ON HER  
12<sup>TH</sup> YEAR OF PASSING

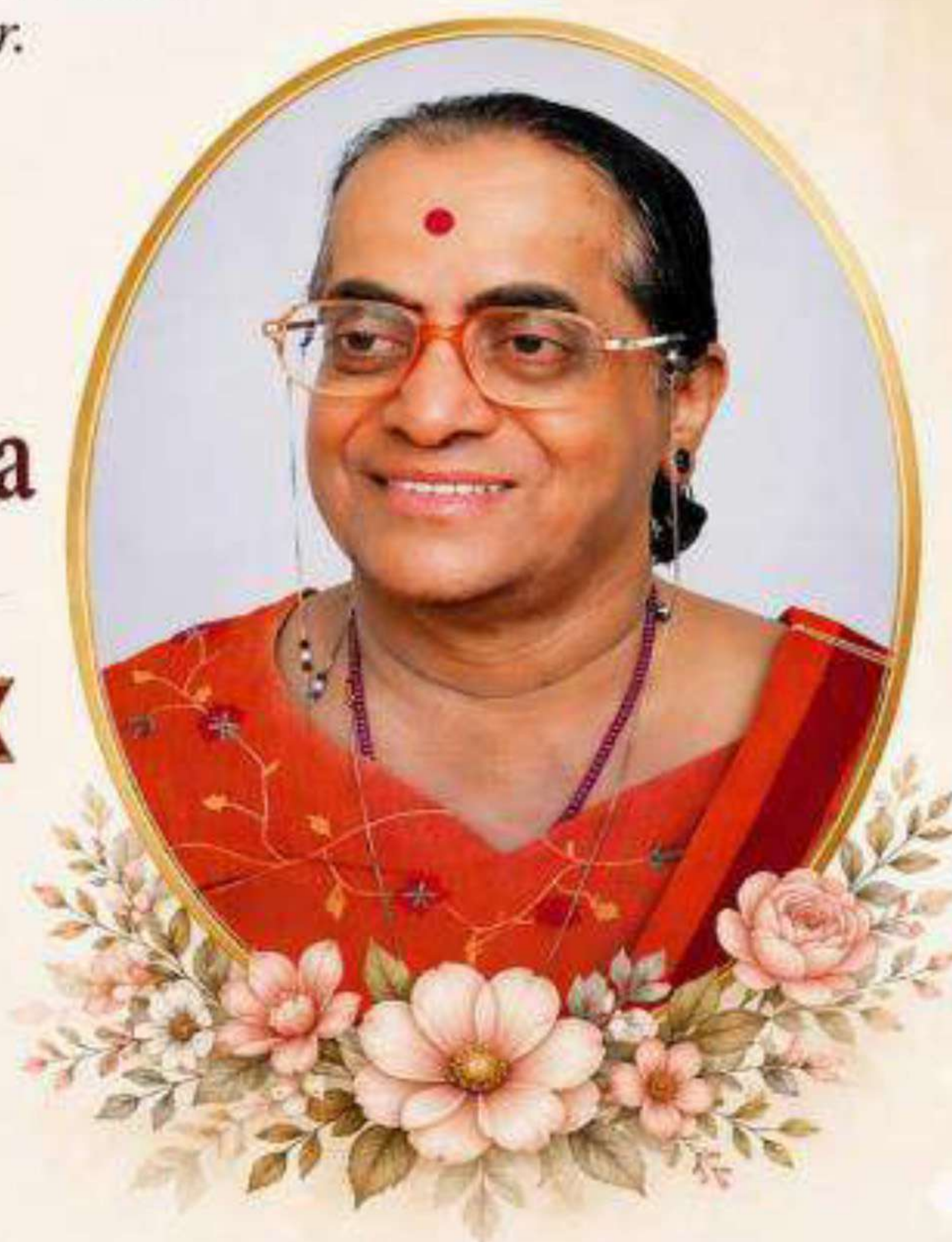
**Prof. Vidhya N. Acharya**

— ∞ (1938 – 2014) ∞ —

**First Lady Nephrologist of India**

**A Visionary Who Built the Foundations**

- ✦ India's first woman nephrologist
- ✦ Pioneer in dialysis and kidney care
- ✦ Mentor to generations of nephrologists
- ✦ A life dedicated to patients, teaching and building the nephrology community



*"She opened doors when there were none,  
she showed the path when it was new,  
and she lifted many so they could rise."*



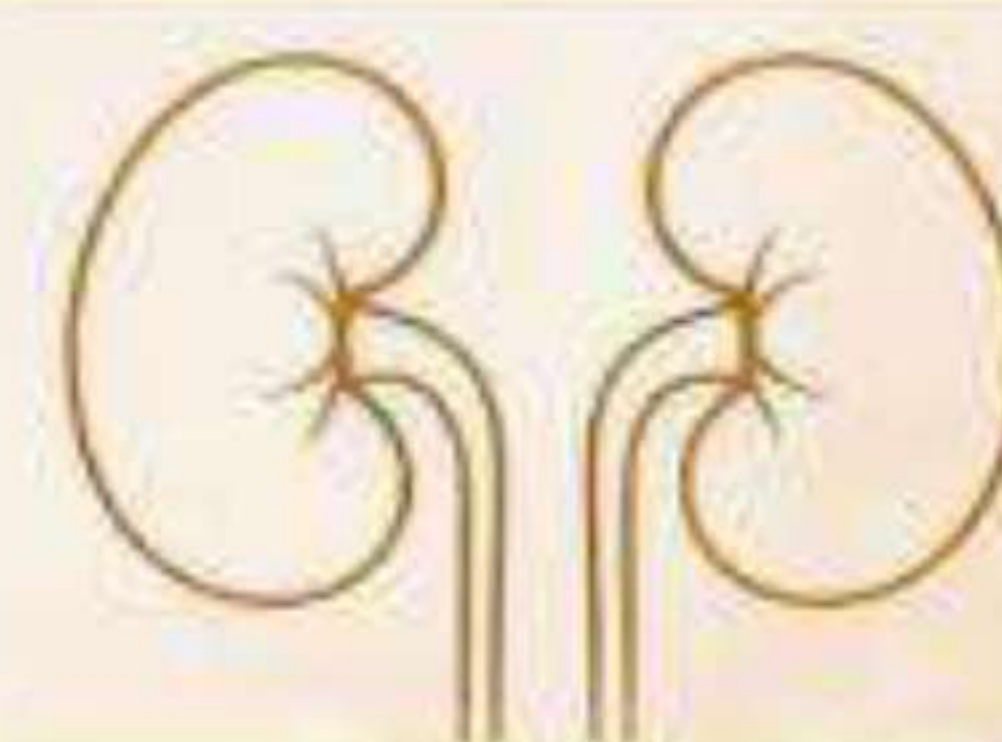
Remembering her  
with gratitude and pride.

Her legacy lives on in  
every nephrologist  
she inspired.

— ∞ TO ALL NEPHROLOGISTS ∞ —

Let us take a moment to remember Prof. Vidhya N. Acharya  
for her pioneering contributions and dedicated service  
that shaped nephrology in India.

*Let her vision continue to guide our journey.*



✦ With Respect • With Gratitude • With Inspiration • ✦

INDEX



# **CONTINUOUS GLUCOSE MONITORING**

Dr.Adam Heller





*Dr. Adam Heller's work helped to transform:*

- Finger –stick glucose testing
- Continuous glucose sensing
- Modern CGM devices used worldwide today

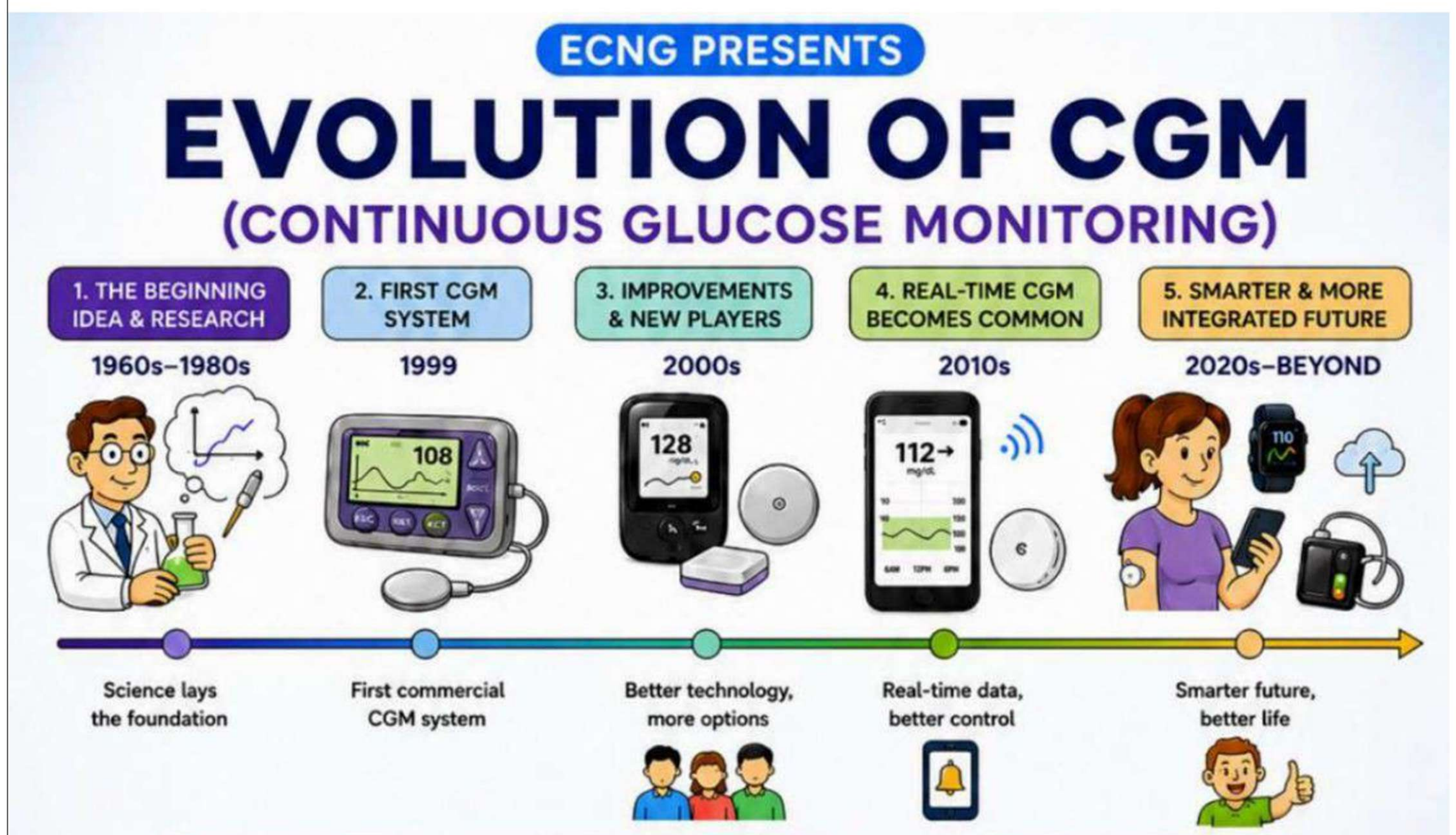
- Early glucose biosensor technology was strongly influenced by scientists such as Adam Heller, whose work greatly advanced modern glucose monitoring systems.

*His biosensor innovations improved:*

- Accuracy
- Stability
- Long-term glucose monitoring



***“CGM measures interstitial glucose continuously and provides trend analysis, improving glycemic control while reducing hypoglycaemia”.***



**INDEX**



# **ALPORTS SPECTRUM DISORDERARTHUR CECIL ALPORT**

Dr.Arthur Cecil Alport





***Arthur Cecil Alport***

## ***Arthur Cecil Alport***

**Was a British Physician who first clearly described the hereditary association of**

- **Kidney Disease**
- **Hearing loss**
- **And amilial occurrence**

**In 1927**

**He published observations of a family in which several members had progressive nephritis and deafness, recognizing that the condition was inherited.**

**AT that time, the condition was called:**

- **Hereditary familial nephritis**
- **Later popularly termed Alport Syndrome**



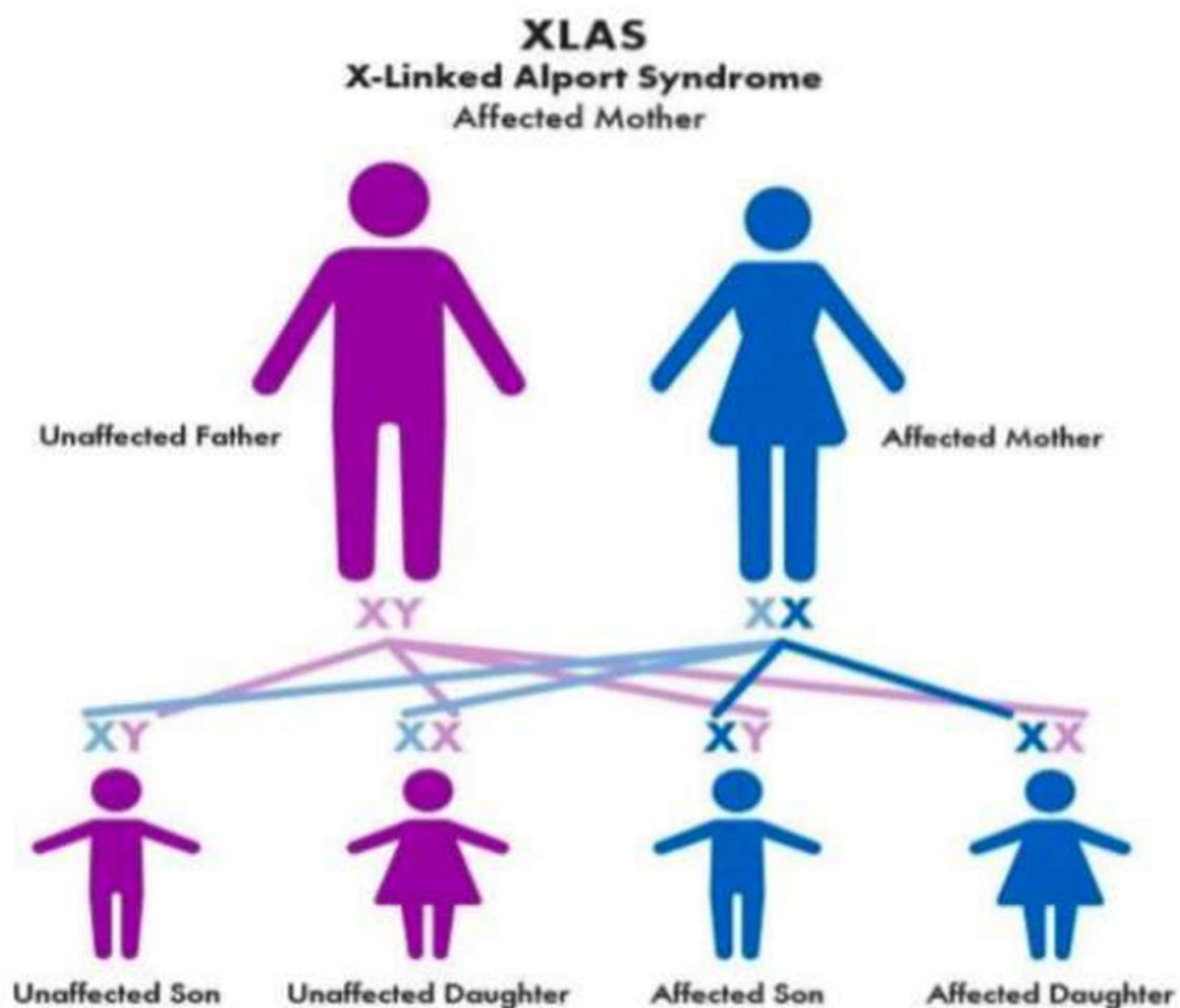
## Modern Terminology

Today many experts use broader terms such as:

- **Alport spectrum disorder**
- COL4A – associated nephropathy
- Type IV collagen nephropathy

This reflects that the disease ranges from:

- Mild isolated haematuria to
- Severe early kidney failure with deafness and ocular disease



**X** is the gene from the Mother that carries Alport Syndrome. Each child will have a 50% probability of inheriting the Alport Syndrome gene from the affected Mother.





# UNDERSTANDING THE ALPORT SPECTRUM

One Gene, Many Faces

A Spectrum of Type IV Collagen Disorders

Different Genes...  
Different Severity...  
Same Spectrum!



CLASSIC TRIAD

  
Kidney Disease

  
Hearing Loss

  
Eye Abnormalities

MILD
SEVERE

Benign Familial Haematuria



Microscopic haematuria only

Thin Basement Membrane Nephropathy



Thin GBM  
Often normal kidney function

Autosomal Dominant Alport Syndrome



Hematuria ± Proteinuria  
May progress to CKD  
(Usually adult onset)

Females With X-Linked Alport Syndrome



Variable severity  
Hematuria ± Proteinuria  
Risk of CKD

Alport Syndrome (Mild Genotype)



Early hematuria  
Progressive CKD  
Later onset

Alport Syndrome (Severe Genotype)



Early onset  
Proteinuria  
Progressive CKD  
Kidney failure

Genes commonly involved: COL4A3, COL4A4, COL4A5, FN1

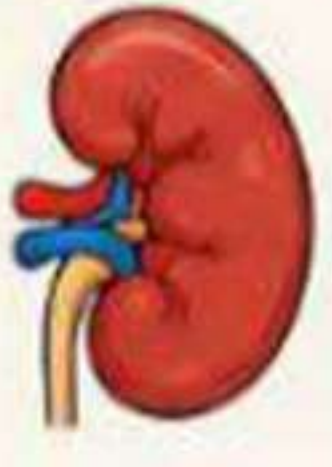
KEY TAKEAWAYS

-  Think Alport in any patient with persistent haematuria
-  Early diagnosis helps slow progression
-  Genetic testing guides management & family screening
-  ACEi/ARB, BP control & early care make a difference

WHAT IS ALPORT SPECTRUM?

Alport Spectrum Disease includes a range of kidney disorders caused by mutations in type IV collagen genes. It ranges from isolated haematuria to kidney failure, often with hearing loss and eye abnormalities.

Recognize early, Treat early, Change outcomes.



INVITATION TO DISCUSSION (NOT WEBINAR)

We cordially invite you to an exclusive discussion for Nephrologists

“ALPORT SPECTRUM DISEASE: FROM GENE TO CLINICAL CARE”

 Date: Monday 11/5/2026

 Time: 09:00 – 10:00 PM IST

 Platform: Zoom Meeting

Join Us to Explore the Spectrum, Improve Outcomes!

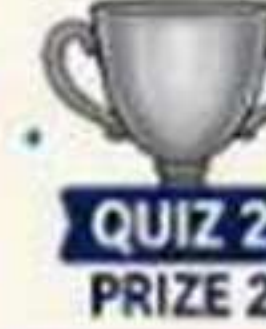
★ ★ ★

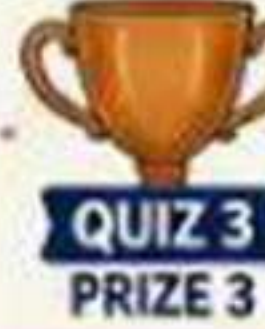
LEARN • SHARE • ADVANCE

Together for Better Kidney Care

3 QUIZES 3 PRIZES!

  
QUIZ 1  
PRIZE 1

  
QUIZ 2  
PRIZE 2

  
QUIZ 3  
PRIZE 3

Be a Part of the Knowledge.  
Be a Part of the Change.



INDEX

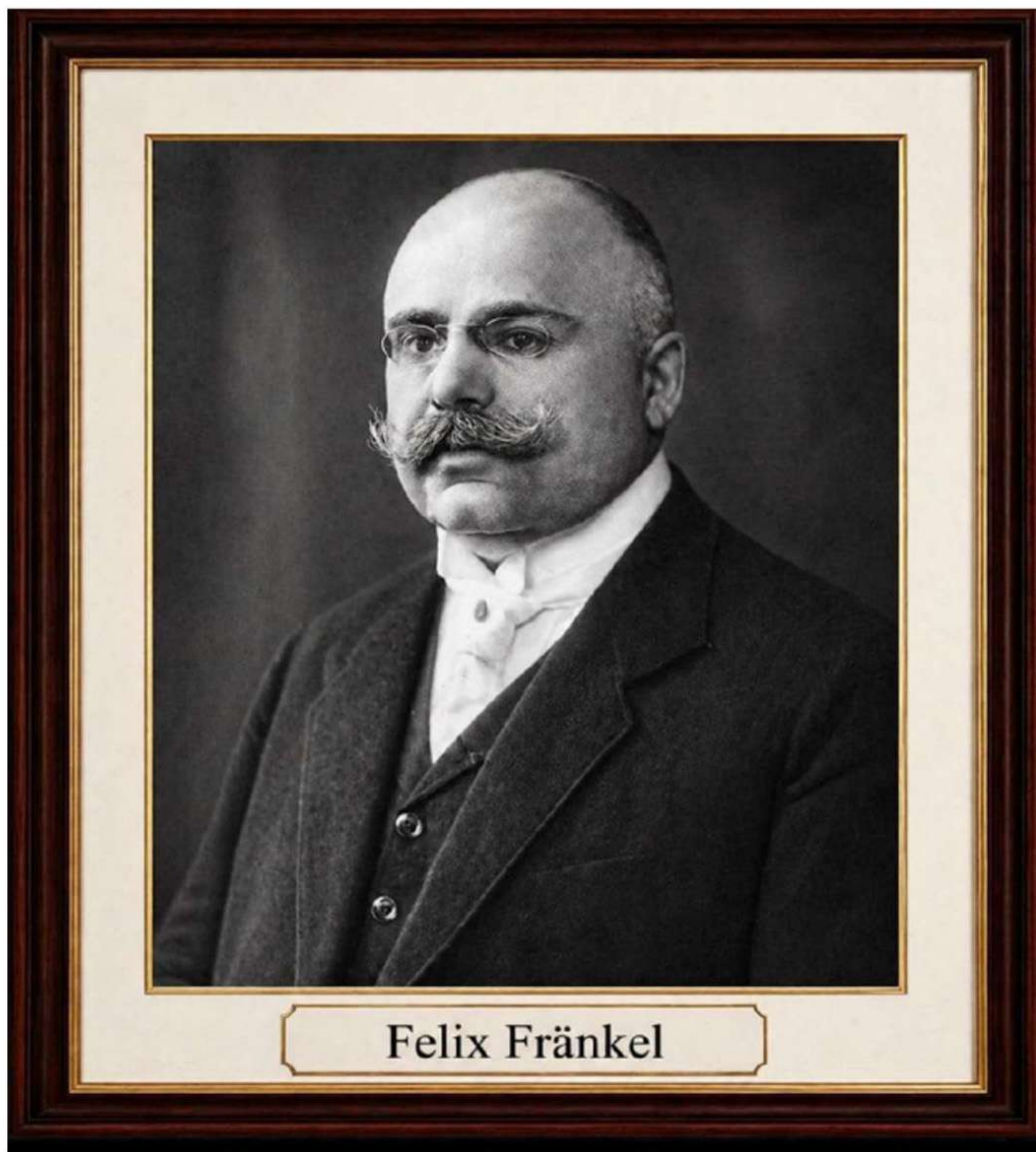




# **PHEOCHROMOCYTOMA**

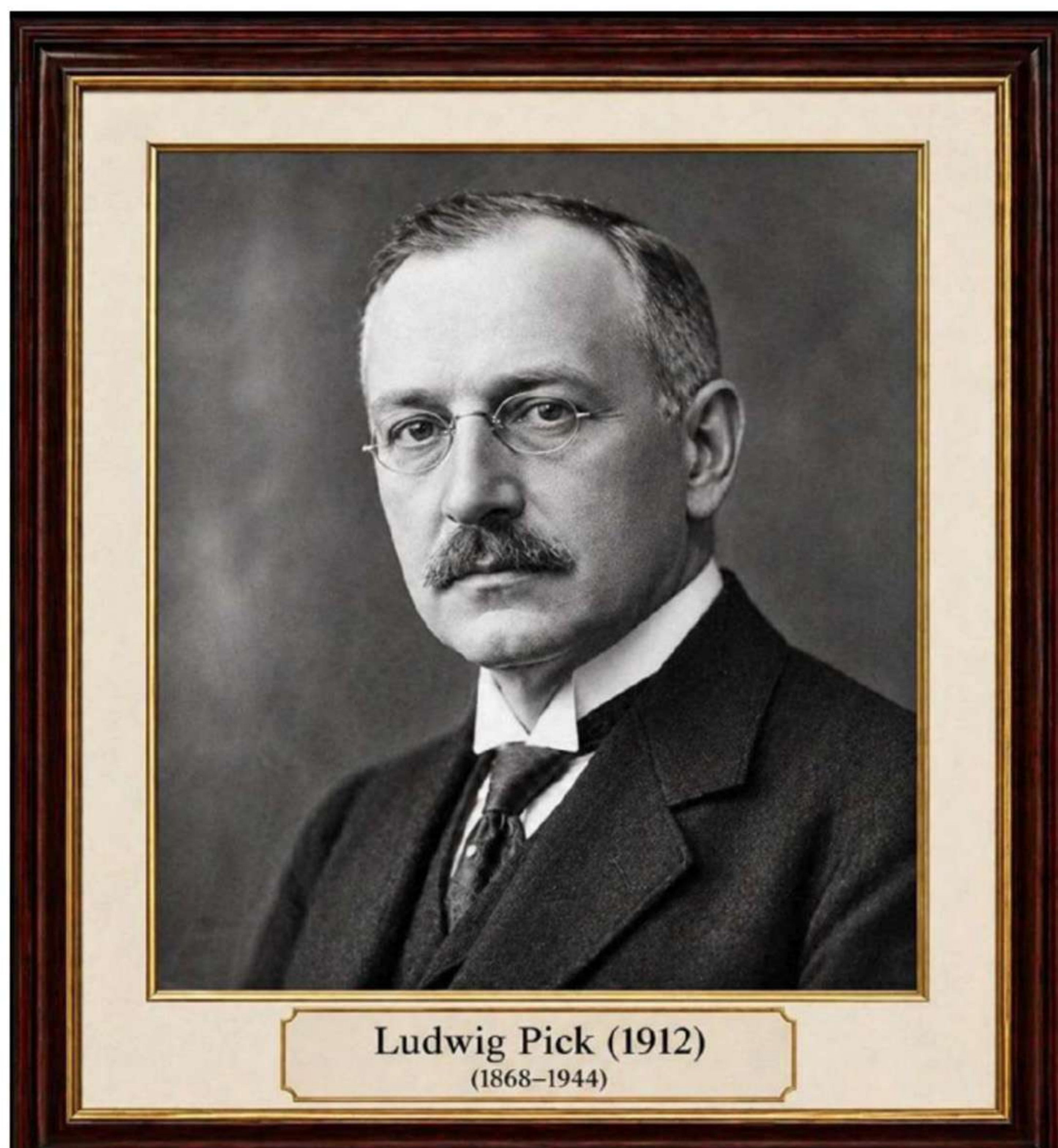
**Dr.Felix Frankel & Dr.Ludwig Pick**





### ***Dr. Felix Frankel (1886)***

- ***First described a case of adrenal tumor associated with severe hypertension***
- ***Recognized the clinical syndrome***



### ***Dr. Ludwig Pick (1912)***

- ***Coined the term "pheochromocytoma"***
- ***Named for the characteristic color change with chromium salts ("dusky tumor")***



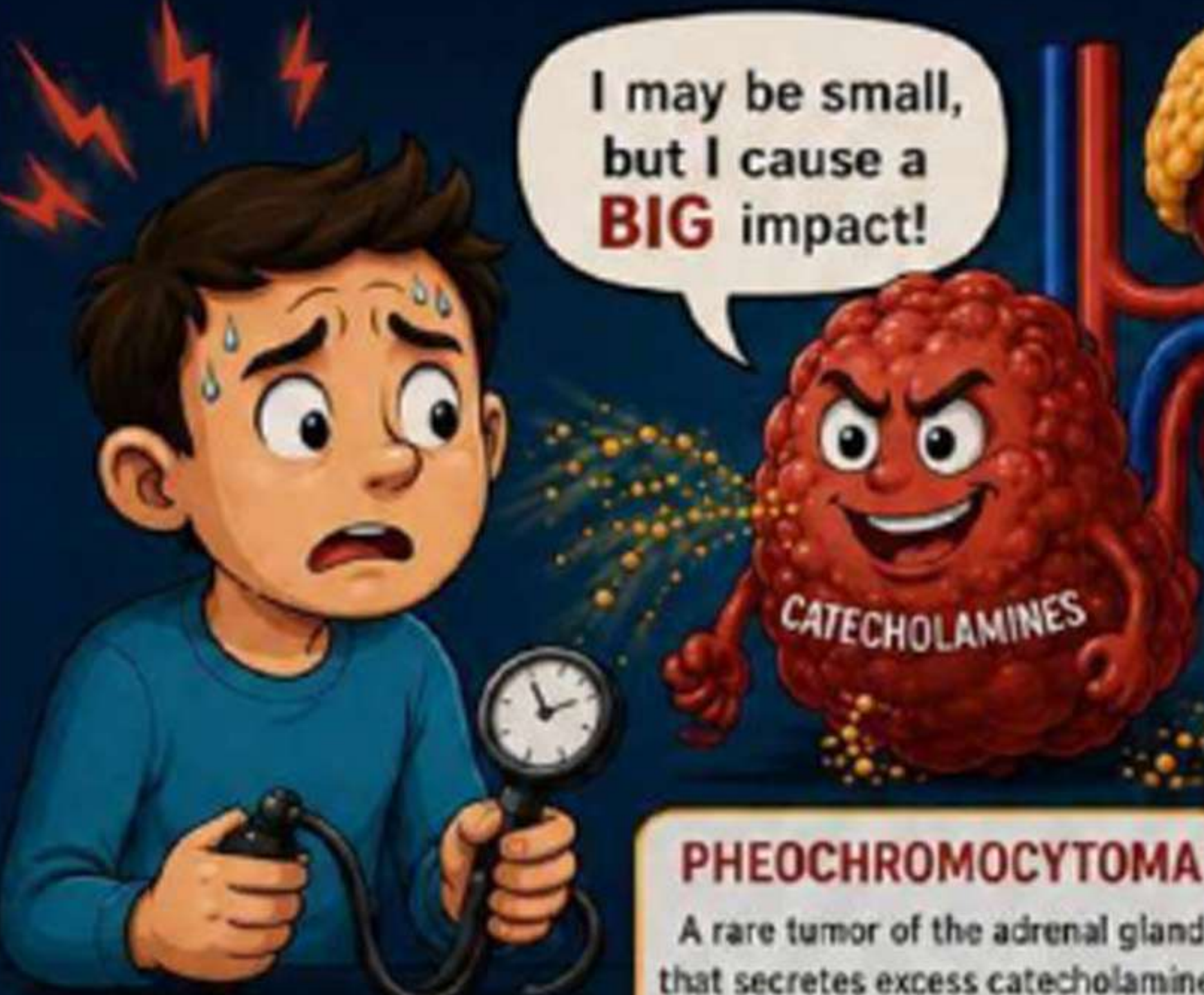
## Dr. Max Schottelius

- Described chromaffin cells
- Established the cellular origin of the tumor

**ECNG**  
Meetings Without Cancellation

# PHEOCHROMOCYTOMA

## The “Pressure” Behind the Symptoms



I may be small, but I cause a **BIG** impact!

**PHEOCHROMOCYTOMA**  
A rare tumor of the adrenal gland that secretes excess catecholamines (epinephrine, norepinephrine)

**SYMPTOMS**

- High Blood Pressure
- Headache
- Palpitations
- Sweating
- Anxiety

**Highlights of the talk**

- \* When to suspect pheochromocytoma beyond the triad.
- Simplify the diagnostic dilemma.
- Peri operative management pearls.
- Latest advances in treatment.

 **CASE CAPSULE** |  **PG-EXAM ORIENTED CLINICAL DISCUSSIONS** |  **POLLING**



**MODERATOR**  
**Dr. Satish Balan**  
DM (Nephrology)  
DNB (Nephrology)  
Senior Consultant Nephrologist & Transplant Physician  
KIMSHEALTH, Trivandrum



**SPEAKER**  
**Dr. K. V. Vilesh**  
DNB (General Medicine)  
DNB (Nephrology)  
FNP (Nephropathology)  
Consultant Nephrologist & Transplant Physician  
Samaritan Hospital, Ernakulam

 **14 MAY 2026** |  **9:00 PM**

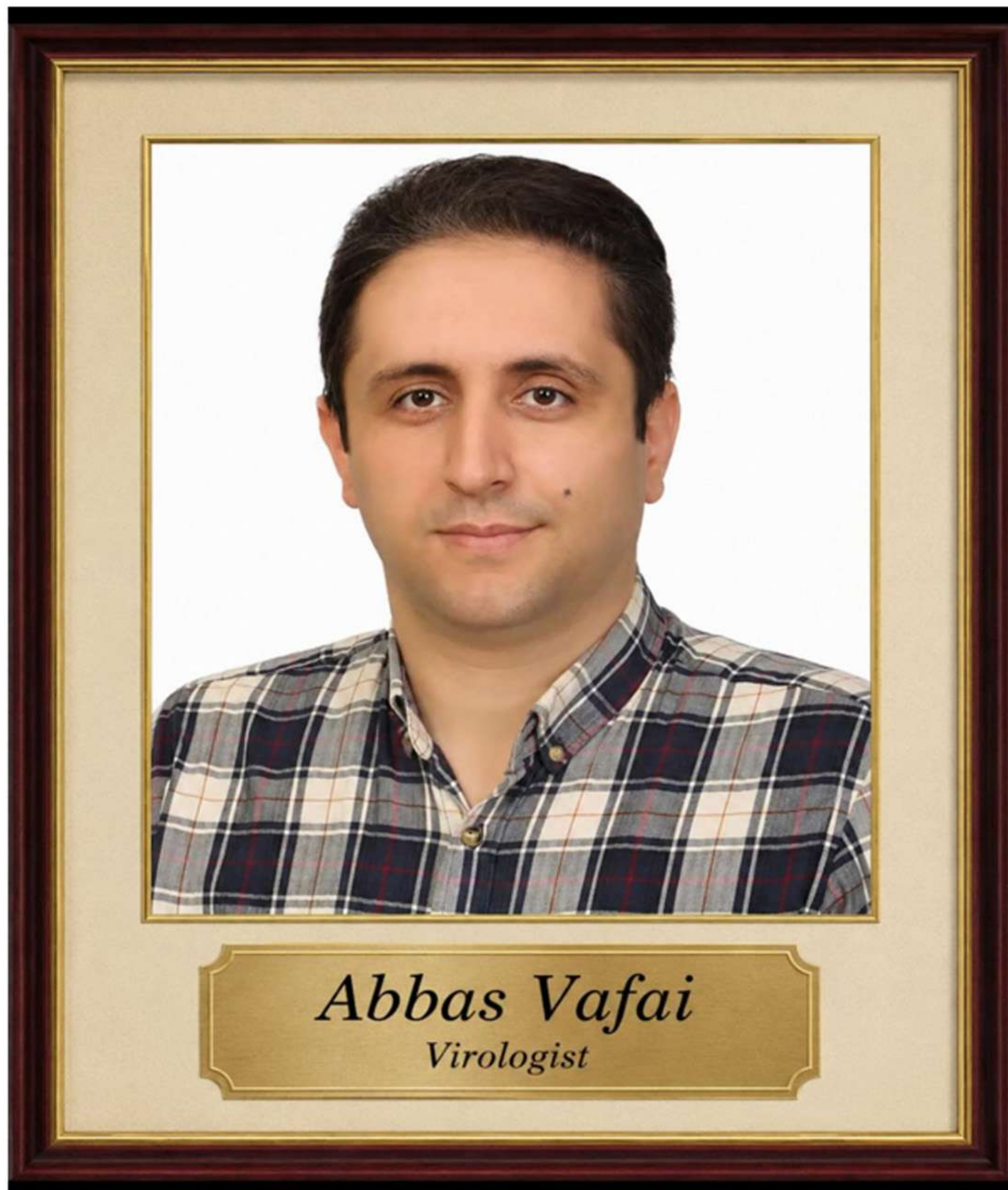
INDEX



# **VACCINATION FOR HERPES VIRUS – SHINGRIX**

**Dr. Abbas Vafai**





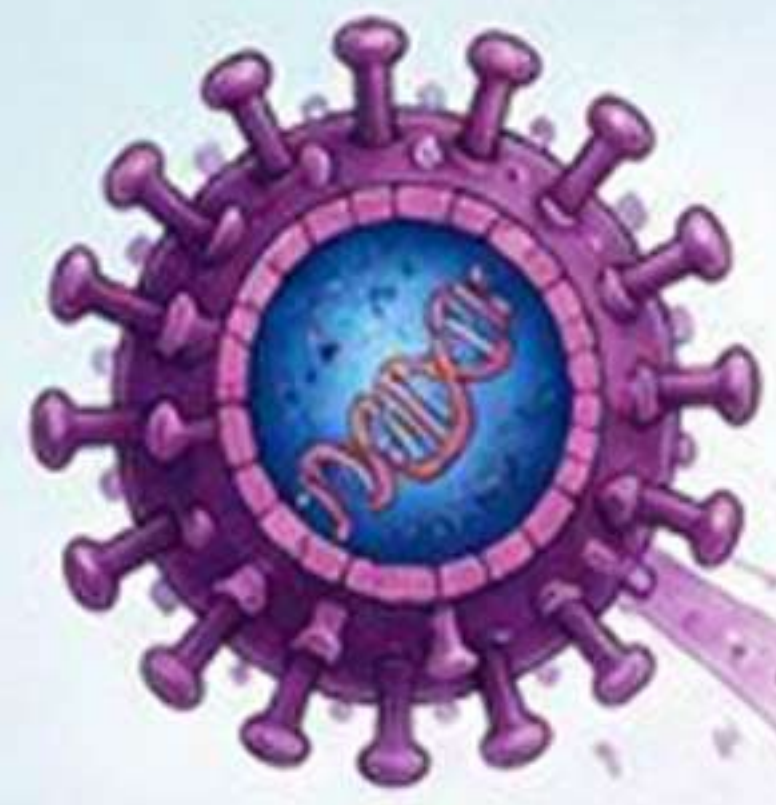
***Dr. Abbas Vafai is an Iranian – American Virologist***

***Dr. Abbas Vafai is an Iranian –American Virologist and Vaccine researcher known for work on the varicella- zoster virus (VZV), the virus responsible for chicken pox and shingles***

***He worked extensively on :***

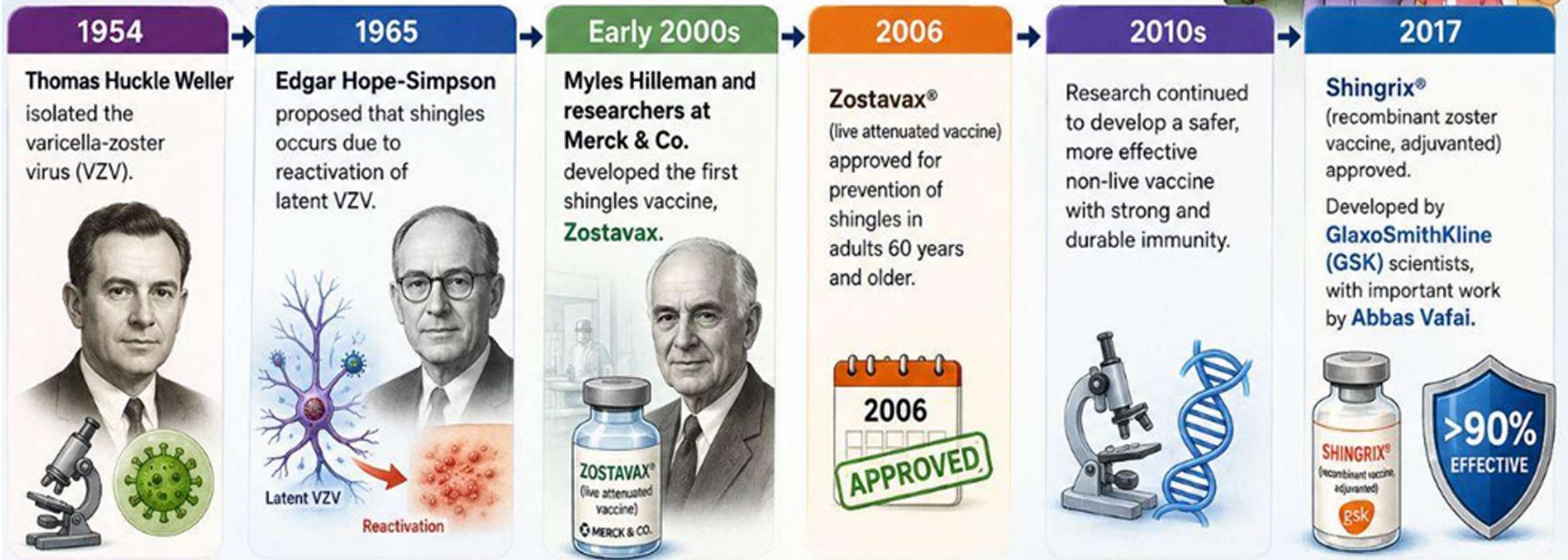
- ***Molecular biology of VZB***
- ***Immune responses to herpes viruses,***
- ***And development of safer recommendation shingles vaccines***





# The Evolution of Vaccination for Herpes Zoster (Shingles)

From scientific discoveries to powerful protection



Decades of discovery. Millions protected. | Vaccination is the best protection against shingles.

## Vaccination for Herpes virus – Shingrix®

(Recombinant Zoster Vaccine, Adjuvanted)

**POWERFUL PROTECTION AGAINST SHINGLES & POSTHERPETIC NEURALGIA (PHN)**

**SHINGRIX®**  
Your Shield. Your Strength.

**2-DOSE SERIES**  
FOR STRONG, LONG-LASTING PROTECTION

**DOSE 1**  
1

**2 TO 6 MONTHS APART**

**DOSE 2**  
2

**Recommended for:**

- Adults 50 years and older
- Adults 19 years and older who are immunocompromised

**HELPS PREVENT**

- Shingles
- Postherpetic Neuralgia (PHN)

**WHO CAN GET IT?**

Even if you had shingles before, had chickenpox, or received the older shingles vaccine (Zostavax®).

**COMMON SIDE EFFECTS**

Sore arm • Fatigue • Headache  
Muscle aches • Fever • Chills  
(Usually 1–3 days)

**NOT A LIVE VACCINE**

Shingrix is a non-live vaccine and cannot cause shingles.

**TALK TO YOUR HEALTHCARE PROVIDER**

See if Shingrix® is right for you.

**SHINGRIX® by GSK – STRONGER PROTECTION. BETTER TOMORROW.**

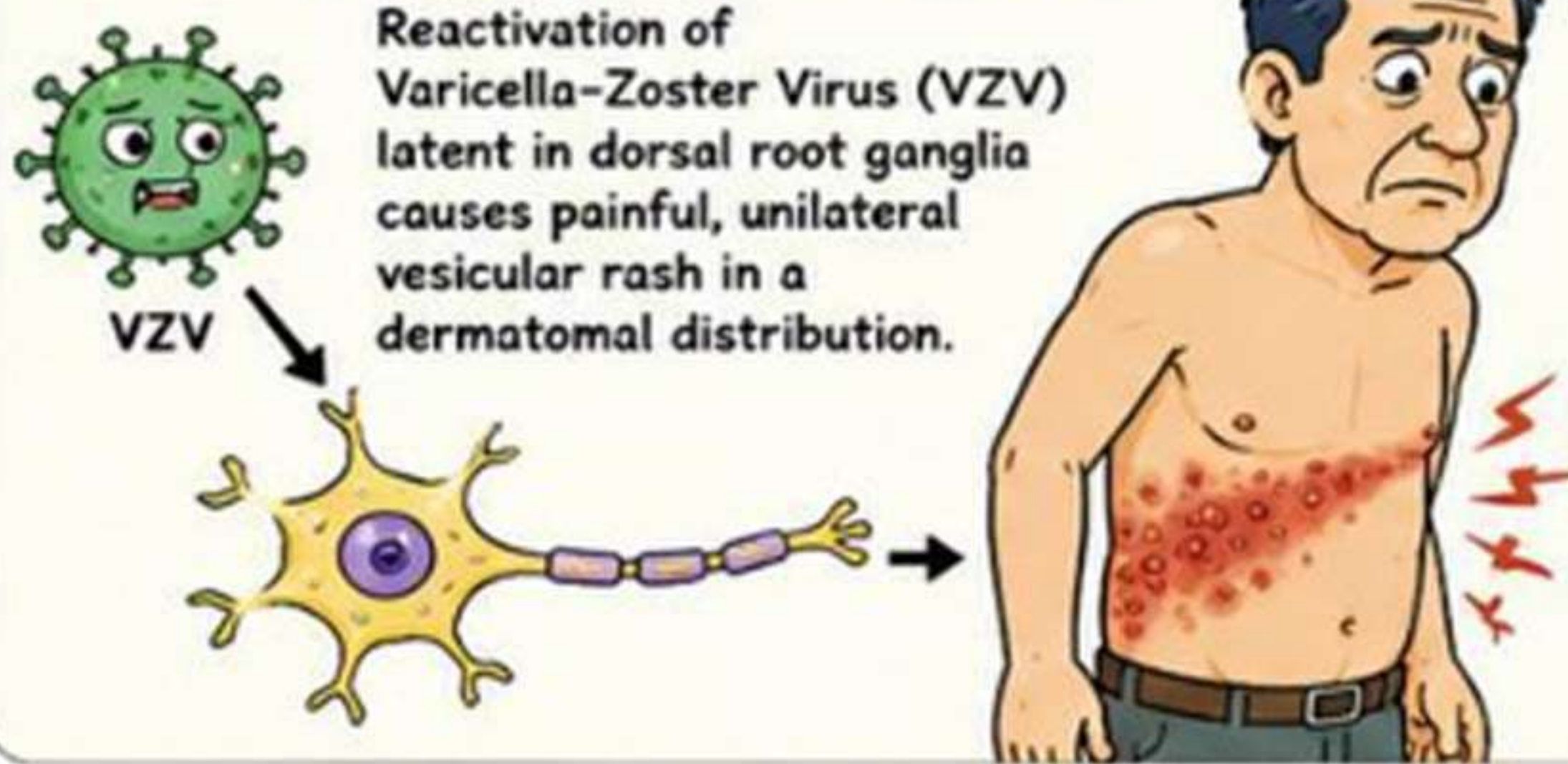
Shingrix is a registered trademark of the GSK group of companies.



# HERPES ZOSTER (VZV) AND KIDNEY/IN CKD

Shingles (Herpes Zoster) is more common, more severe and more complicated in CKD

## WHAT IS HERPES ZOSTER?



## WHY HIGHER RISK IN CKD?

- Impaired cell-mediated immunity (uremia, inflammation)
- Diabetes mellitus
- Older age
- Malnutrition
- Steroids / Immunosuppressants
- Dialysis
- Kidney transplantation

Incidence:  
1.5–2 times higher in CKD  
Much higher after transplant



## CLINICAL FEATURES

- Painful tingling/burning followed by vesicular rash
- Unilateral, dermatomal
- Common: thoracic dermatomes, trigeminal (ophthalmic)

In CKD patients:  
• More extensive lesions  
• Delayed healing  
• Secondary infection  
• Disseminated zoster may occur



## RENAL IMPLICATIONS

### 1. Acute Kidney Injury (AKI)

- Sepsis
- Dehydration
- Rhabdomyolysis (rare)
- Multiorgan involvement



### 2. Drug-Induced Nephrotoxicity

Mainly due to Antivirals

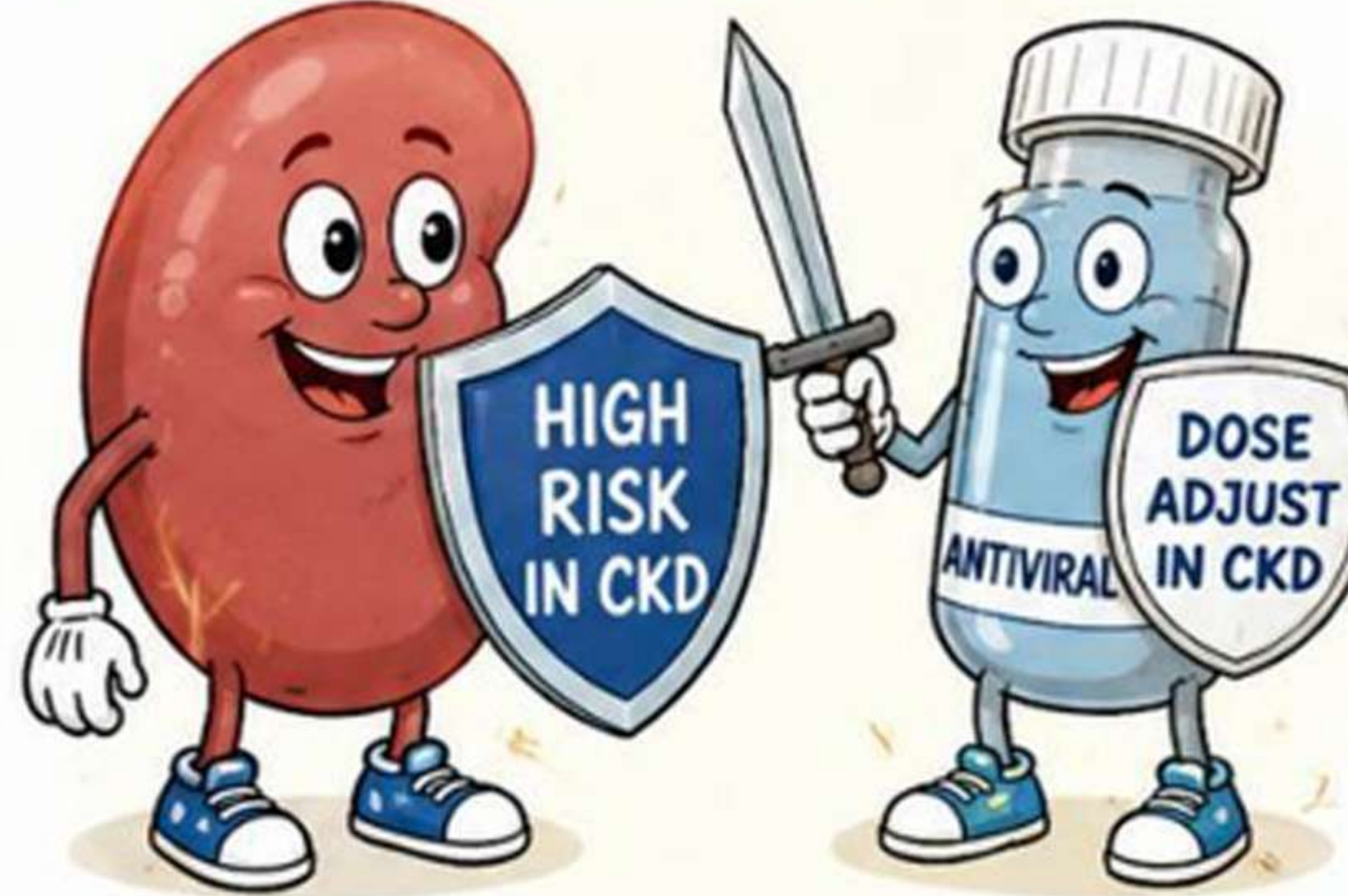
(Acyclovir, Valacyclovir, Famciclovir)

- Crystal nephropathy
- AKI
- Neurotoxicity in CKD



### PREVENTION

- ✓ Dose adjustment as per eGFR
- ✓ Adequate hydration
- ✓ Slow IV infusion



## ANTIVIRAL DOSE ADJUSTMENT IN CKD

Antivirals: Acyclovir, Valacyclovir, Famciclovir

| eGFR (ml/min/1.73m <sup>2</sup> ) | What to do                                  |
|-----------------------------------|---------------------------------------------|
| > 50                              | Usual dose                                  |
| 10 – 50                           | Reduce dose / increase dosing interval      |
| < 10 or Dialysis                  | Markedly reduced dose (Give after dialysis) |

Overdose can cause:  
Confusion, tremors, hallucinations, encephalopathy, crystal nephropathy

## COMPLICATIONS IN CKD PATIENTS

### Neurological

- Post-herpetic neuralgia
- Meningitis
- Encephalitis

### Ocular

- Keratitis
- Uveitis
- Vision loss

### Cutaneous

- Disseminated zoster
- Necrotic lesions
- Secondary infection

### Visceral (rare)

- Pneumonitis
- Hepatitis
- Vasculopathy

Post-herpetic neuralgia – very common and severe in CKD

## DIALYSIS PATIENTS

- Higher incidence
- Severe pain syndromes
- Higher recurrence
- Dose antivirals after dialysis

## KIDNEY TRANSPLANT RECIPIENTS

- Very high risk
- Disseminated & visceral disease
- May need IV acyclovir
- Consider reduction of immunosuppression

## VACCINATION (PREVENTION)

Recombinant Zoster Vaccine (RZV) – Shingrix®

- ✓ Non-live vaccine
- ✓ Safe in CKD, dialysis, transplant candidates
- ✓ Highly effective



Recommended for:  
Adults ≥ 50 years, CKD stages 3–5, Dialysis patients, Transplant candidates

Schedule:  
2 doses  
(2–6 months apart)

## KEY POINTS (Remember!)

- CKD → Impaired Cell-mediated Immunity
- ↑ Incidence & Severity of Herpes Zoster
- Antivirals need Renal Dose Adjustment
- Major complication: Post-herpetic Neuralgia
- Overdose → Neurotoxicity + Crystal Nephropathy
- Best prevention: Shingrix (RZV) Vaccine

## One-line Summary:

"Herpes zoster is more frequent and severe in CKD due to impaired cell-mediated immunity; management requires careful antiviral dose adjustment and emphasis on vaccination."



INDEX

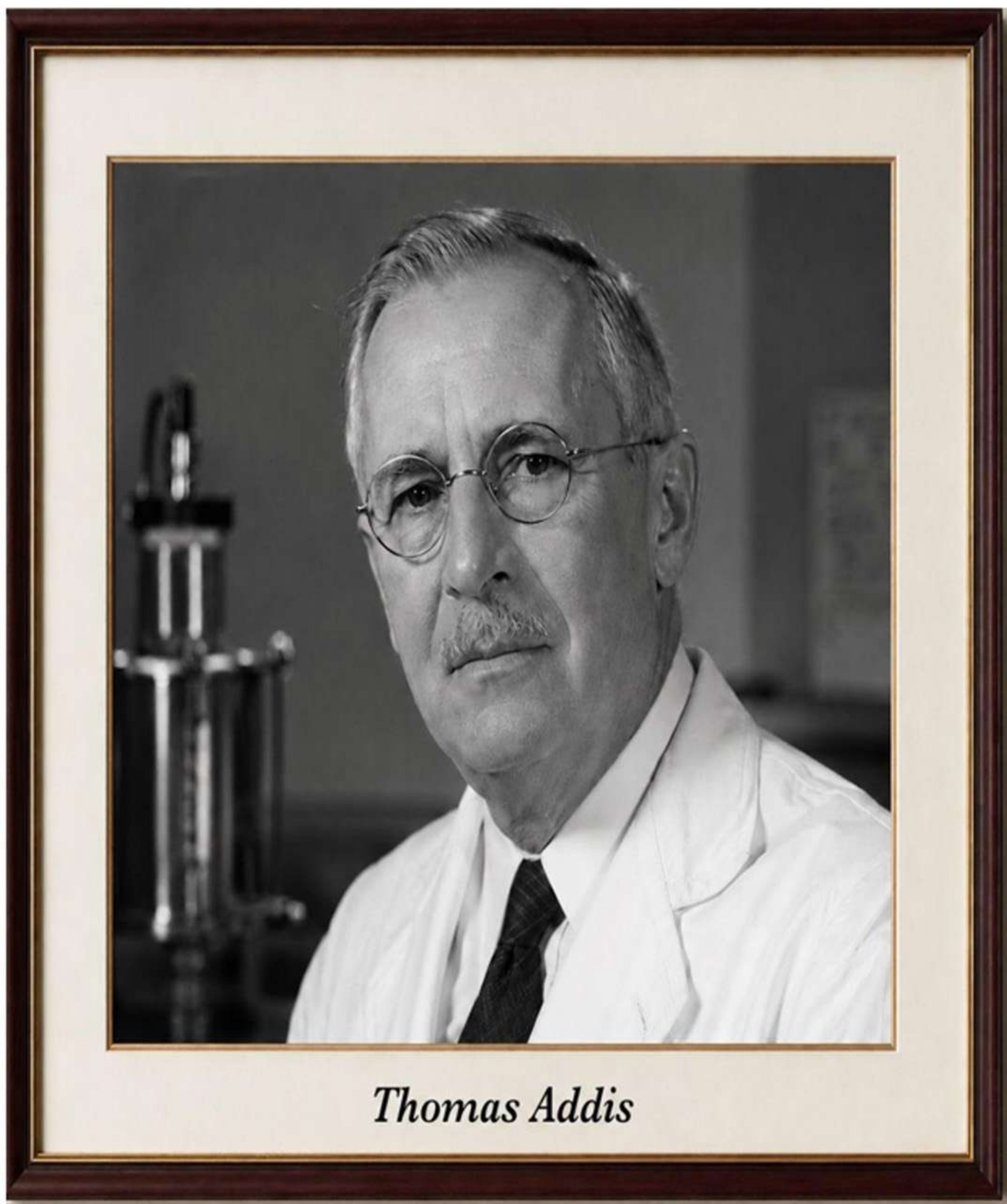




# **EGFR & ORAL HYPOGLYCAEMIC AGENTS (OHA) IN CKD**

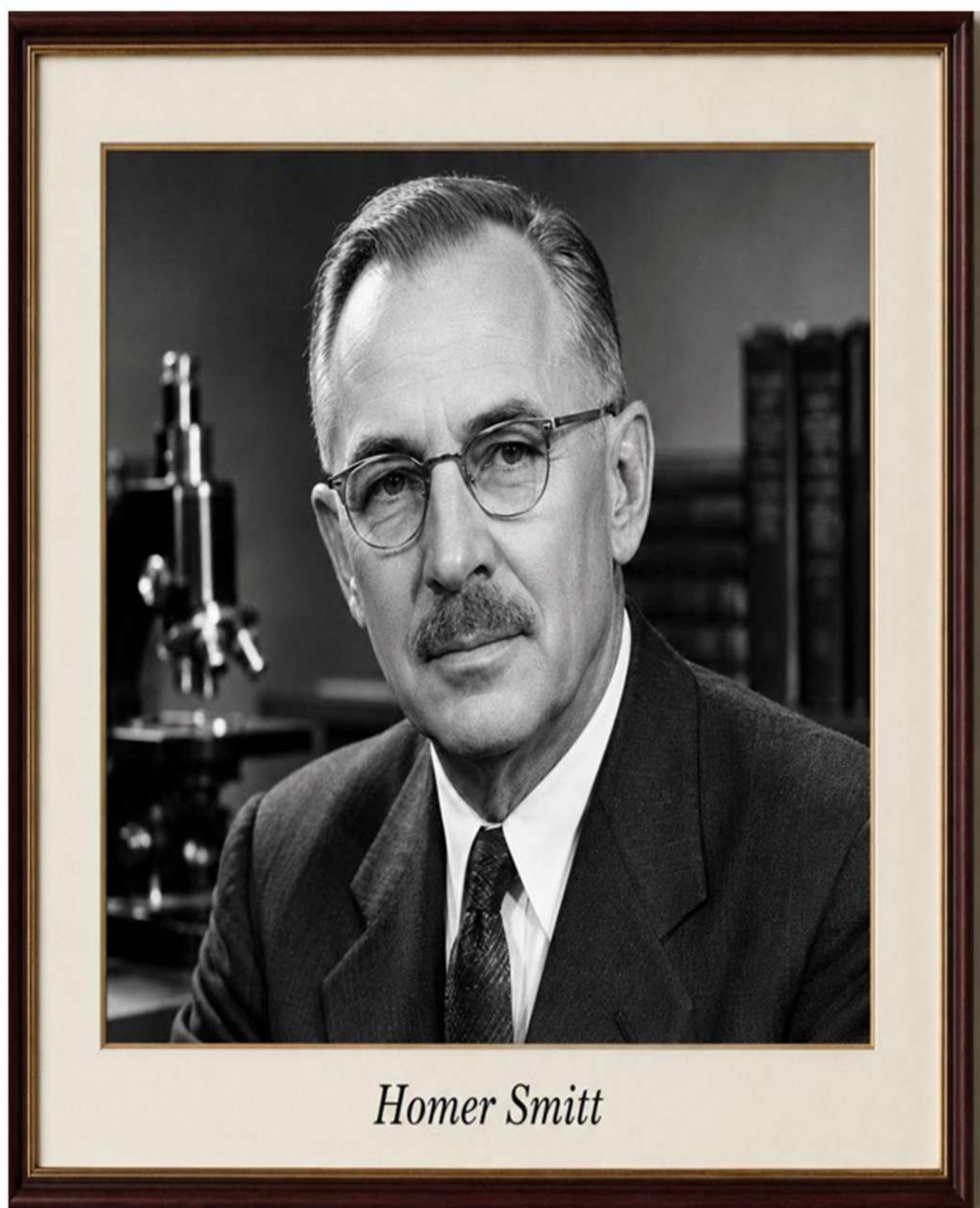
**Dr. Thomas Addis & Dr. Homer Smitt**





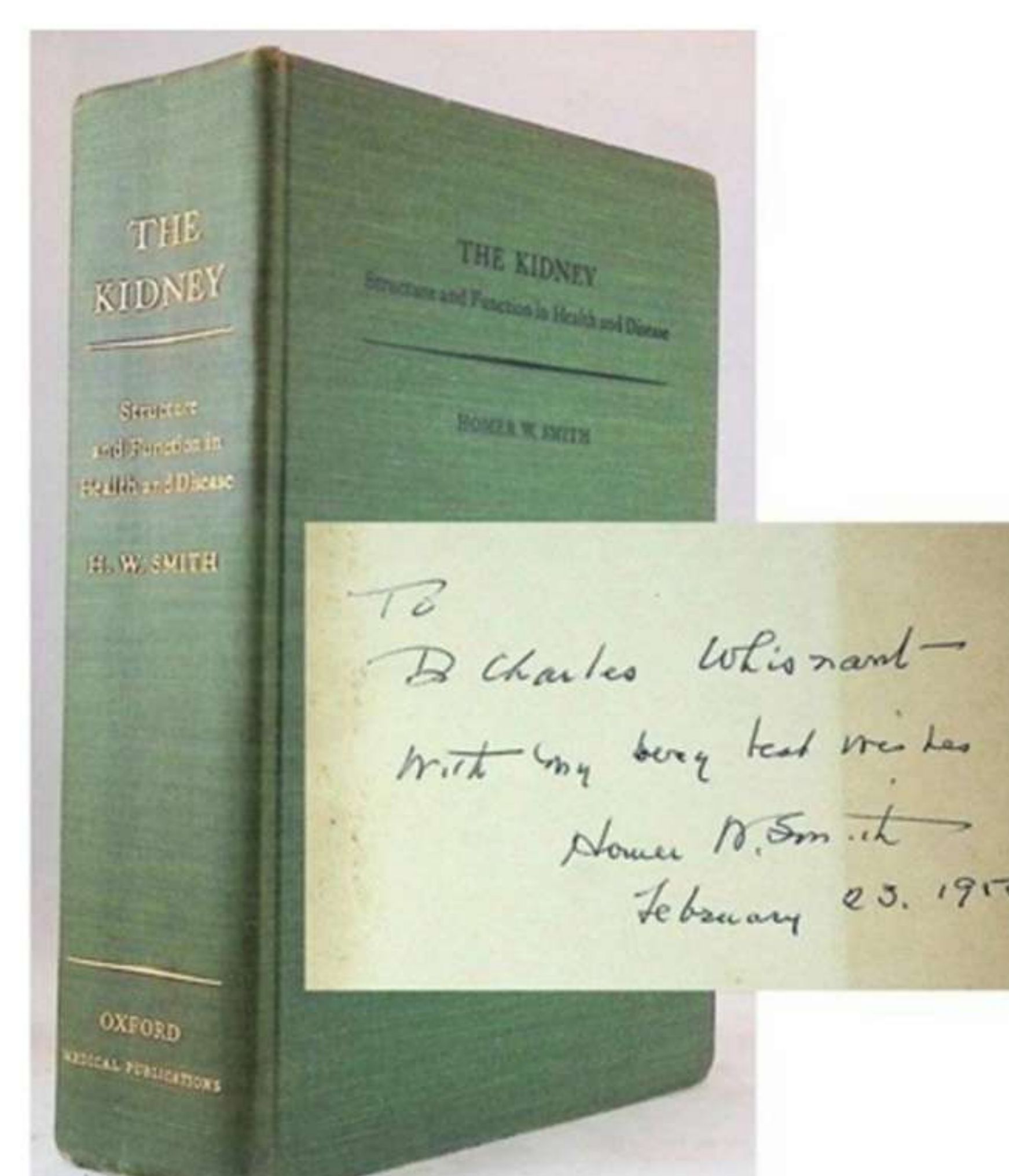
Thomas Addis

***Dr. Thomas Addis was one of the early pioneers who emphasized quantitative assessment of kidney function.***



Homer Smitt

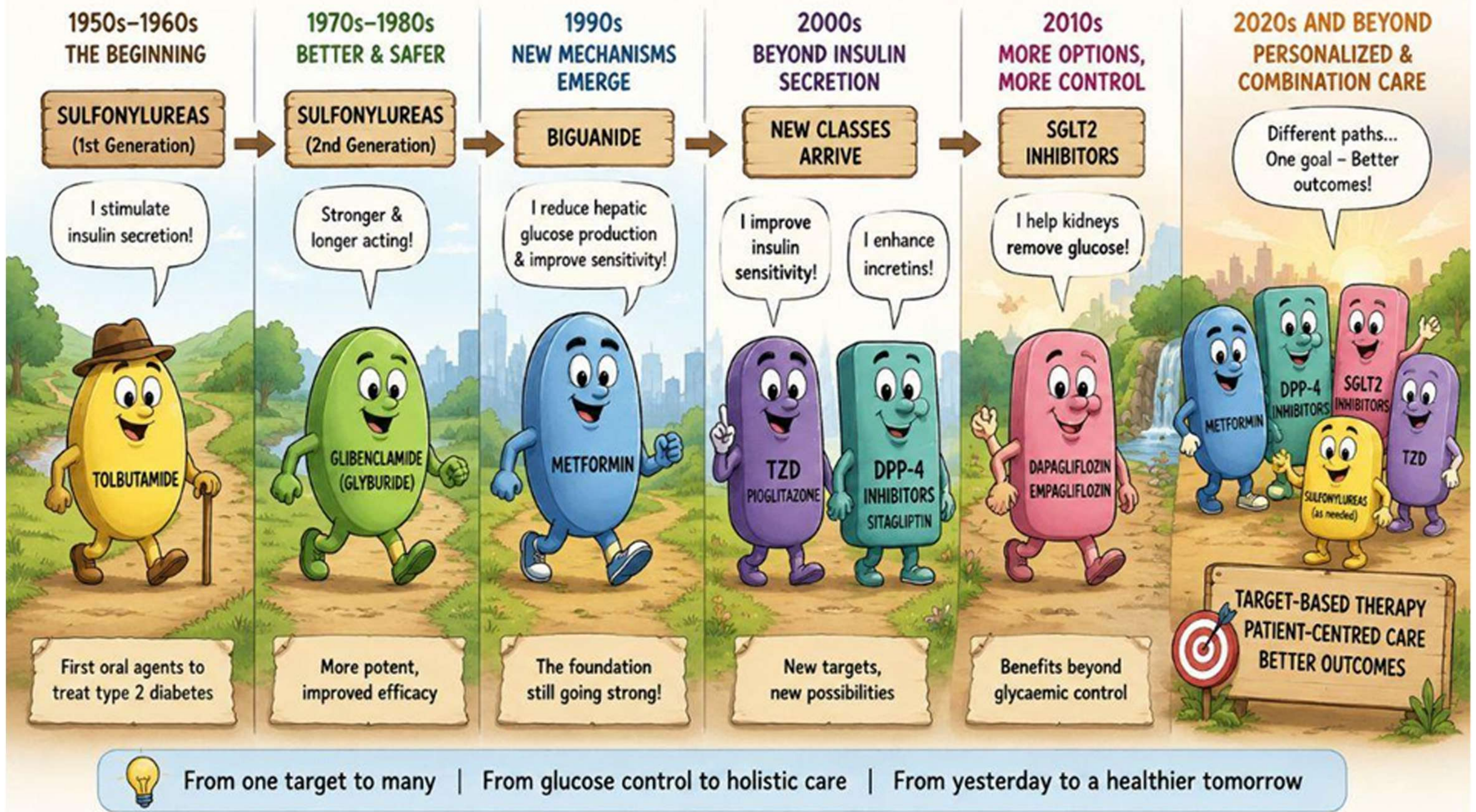
***Dr. Homer Smitt demonstrated that inulin clearance provides an accurate measure of eGFR***



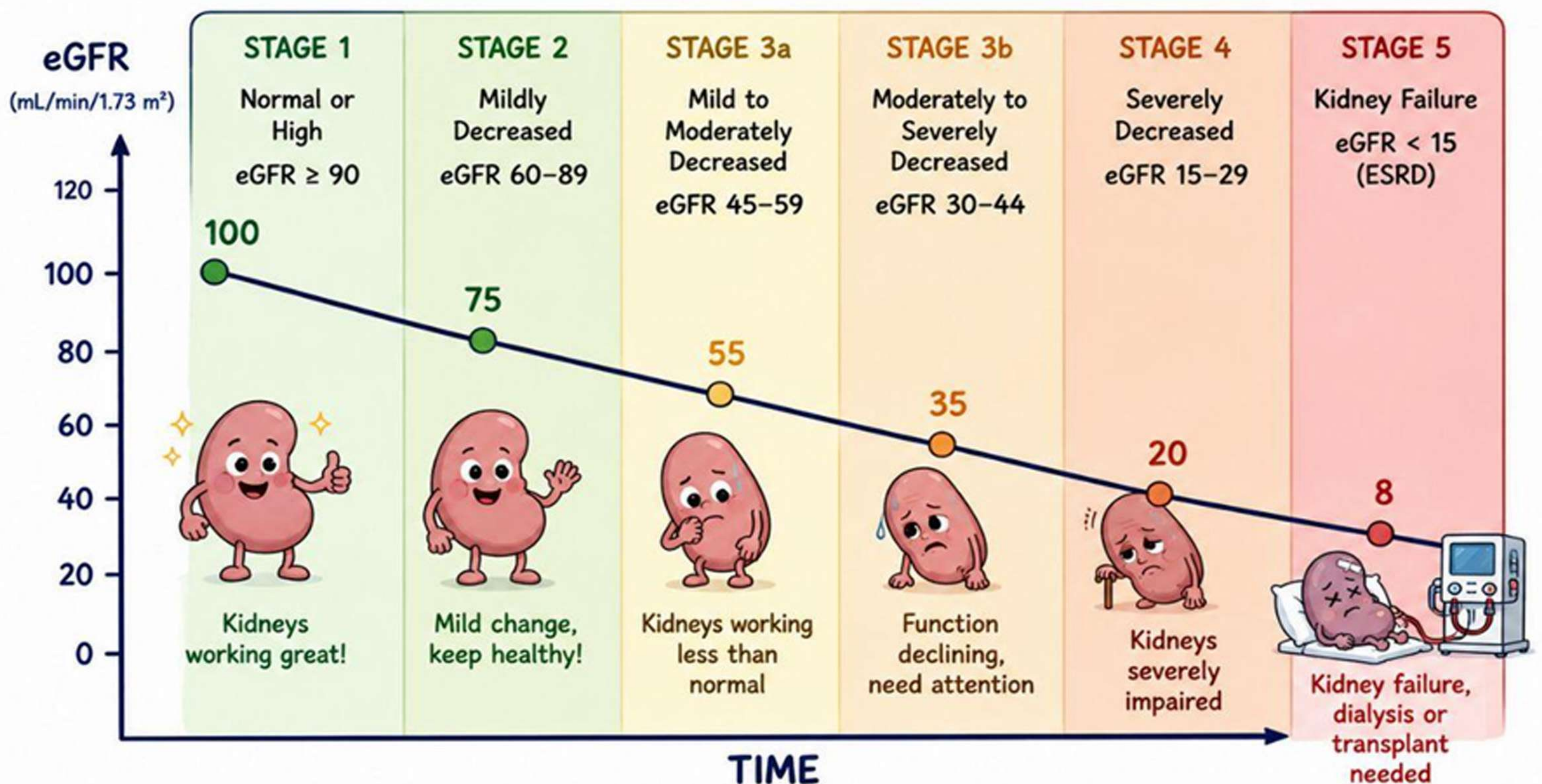


# EVOLUTION OF ORAL HYPOGLYCAEMIC DRUGS

From the Past to Better Control



# EVOLUTION OF eGFR



## WHAT IT MEANS



Protect your kidneys



Healthy lifestyle, regular check-up



Monitor and control risk factors



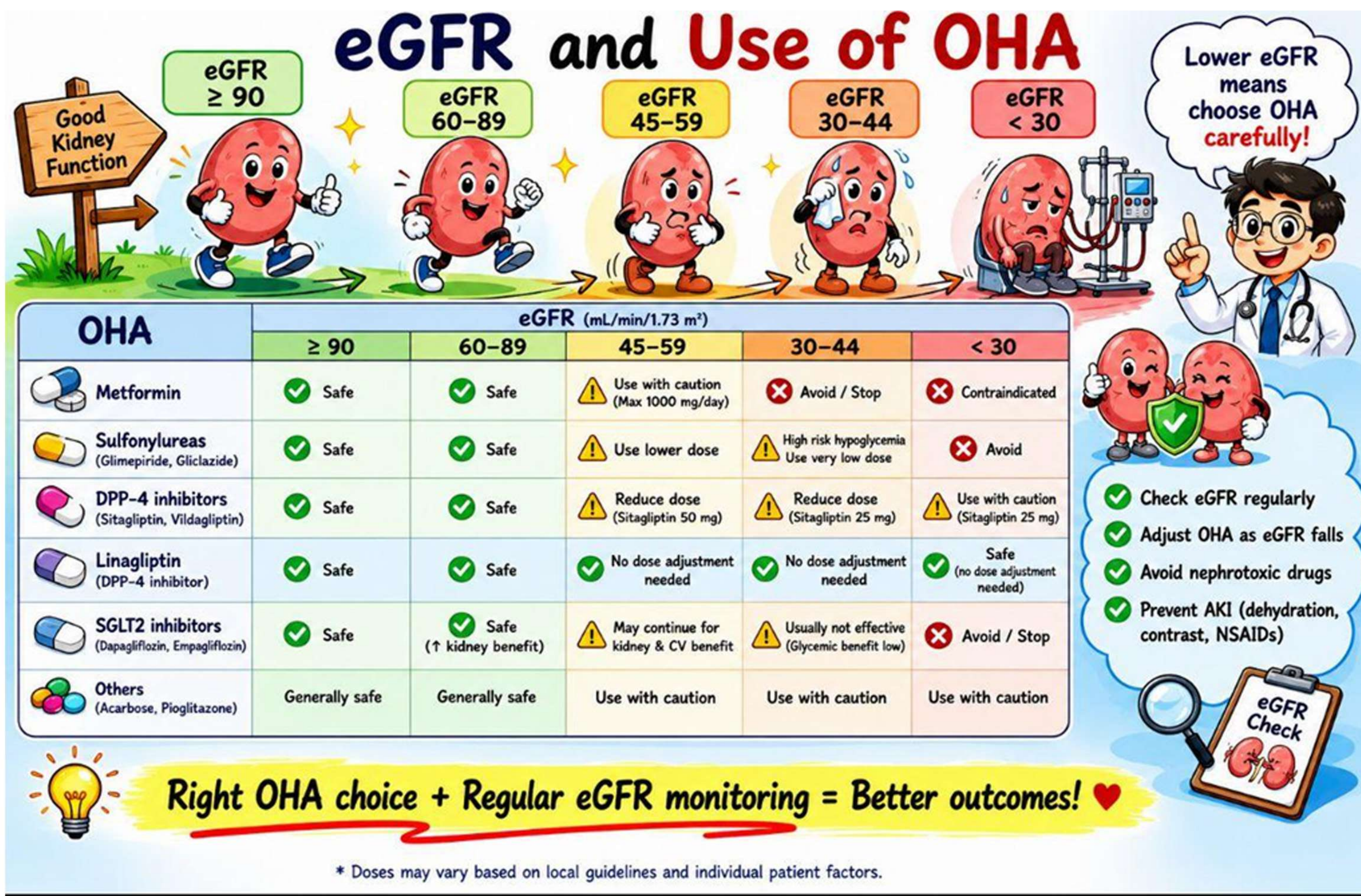
Follow treatment and doctor's advice



Plan for renal replacement therapy

Lower eGFR over time means worsening kidney function.  
 Early detection and care can slow the decline! ❤️





INDEX